

An Evaluation of the Alternative Response Technology Evaluation System (ARTES)

Based on the Deepwater Horizon Experience

API TECHNICAL REPORT 1142
JULY, 2013



AMERICAN PETROLEUM INSTITUTE

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Executive Summary

The oil and gas industry convened the Joint Industry Oil Spill Preparedness and Response Task Force (OSPR JITF) in June 2010 to evaluate procedures and lessons learned during the Deepwater Horizon (DWH) oil spill response. The initial focus of the JITF was “to identify potential opportunities for improvement to the oil spill response system in the areas of planning and coordination, optimization of each response tool, research and development (R&D), technology advancement, and training/education of all parties preparing for or responding to an oil spill.” In September 2010, the JITF issued a draft report containing preliminary recommendations for improvements.

Following the November 2010 update of the OSPR JITF report, the American Petroleum Institute’s (API’s) Oil Spill Preparedness and Response Subcommittee, convened to address the recommendations made by the JITF. As a result of two recommendations from this OSPR JITF report later defined as AT-1 and AT-2, an API Technical Working Group (TWG) was formed to complete the tasks. The TWG’s tasks were presented as follows:

- Address Alternative Technology Recommendation #1 (AT-1, Concurrent Incident Evaluation)—The TWG’s evaluation of the existing ARTES process based on the extensive lessons learned from the Deepwater Horizon experience and other applicable oil spill response efforts.
- Address Alternative Technology Recommendation #2 (AT-2, Non-Incident Evaluation)—The TWG’s assessment of information-sharing strategies and incentives for substantive OSPR industry involvement, specifically the following:
 - ✓ The feasibility of developing a process that can serve as a transparent “clearinghouse” for sharing new ideas and technologies.
 - ✓ The possibility of incorporating incentives to facilitate the development of new oil spill response technologies.
- The TWG took it upon itself to add a third task to their work, which was to formulate an agency engagement plan—The TWG’s recommended path for API to propose endorsed ideas to the appropriate government agencies.

The TWG, under the direction of Mike Cortez (BP), comprises representatives from BP, ExxonMobil, Chevron, the United States Coast Guard, the National Oceanographic and Atmospheric Administration (NOAA), the Environmental Protection Agency, the Office of Oil Spill Prevention and Response within the California Department of Fish and Game, and various response contractors (O’Brien’s Response Management, Lukins & Associates). Virtually all of the TWG members participated in the Deepwater Horizon response.

The existing ARTES process was designed by a workgroup commissioned by regional response teams and has been hosted on the NOAA website since 2002. It was developed to assess proposed non-conventional alternative oil spill countermeasures to determine their usefulness as response tools. The system was designed to evaluate one potential response tool at a time and was used sporadically between 2002 and the 2010 DWH incident. ARTES was used only once during an active response and, therefore, was never embedded in the Incident Command System (ICS). During the DWH response, it was necessary to evaluate conventional (booming, skimming, etc.) countermeasure improvements as well as novel alternative response technologies and ideas.

Outlined below are the TWG's **six primary recommendations for consideration by the appropriate authorizing body**. Supporting information for these can be found in the body of this report and in the attachments.

- A scalable Response Technology Evaluation (RTE) Unit under the direction of an RTE Unit Leader should be made part of the Planning Section within the ICS for future Tier 3 spills and Tier 2 spills as appropriate.
- The RTE Unit should be responsible for collecting, evaluating, and testing all new or improved technology ideas, regardless of their status as conventional or alternative response techniques.
- The RTE Unit, as part of the ICS organization, should be the preferred avenue for the public or vendors to submit ideas to assist in spill response.
- The RTE Unit should use a multi-stage review process of progressive technical assessments to evaluate ideas submitted.
- The National Response Team should solicit for the development of a database system, the basic requirements of which are defined in the body of this report, to be used by the RTE Unit in requesting, consolidating, organizing, and communicating to those who submit ideas for consideration.
- The Responder Knowledge Base hosted by the National Preparedness Directorate within the Federal Emergency Management Agency should be used as the “clearinghouse” to hold and disseminate RTE assessment/test results because this existing public database is readily available to responders.

Although these are the most critical recommendations, others regarding the proposed RTE process are contained in Section 5. It is recognized that, if an RTE is made a formal part of the ICS structure, then training and exercise drilling will be required, but that these activities are beyond the scope of this TWG's responsibilities.

It is recognized that both industry and government have a role in evaluating new OSR technologies under normal circumstances as well as during spill events. During spill events, it is especially important that specific roles and responsibilities of the government and RP be clearly established (and practiced during exercises). When assessing the system and forming their recommendations, the TWG focused on the end result of positioning the Federal On-Scene Coordinator to make fully informed decisions on whether or not to use new technologies, products, and ideas when responding to an oil spill.

An Evaluation of the Alternative Response Technology Evaluation System (ARTES)

Based on the Deepwater Horizon Experience

1 Introduction

1.1 Overview

As the response phase of the Deepwater Horizon (DWH) incident entered the fall of 2010, the Joint Industry Oil Spill Preparedness and Response Task Force (OSPR JITF), led by the American Petroleum Institute (API), was finalizing its initial draft of assessments and recommendations based on the DWH response. The OSPR JITF issued a draft of their report in September 2010. This report concluded that a review of the Alternative Response Tool Evaluation System (ARTES) was needed, resulting in the establishment of a Technical Working Group (TWG). The TWG was given the following tasks:

- OSPR JITF Alternative Technology Recommendation #1 (AT-1, Concurrent Incident Evaluation, Task 1)—To examine and recommend potential changes to the existing ARTES process endorsed by the National Oceanographic and Atmospheric Administration (NOAA).

The TWG's evaluation of the ARTES process is based on the following:

- ✓ The extensive lessons learned from the DWH Alternative Response Technologies (ART) experience
- ✓ The US Coast Guard's (USCG's) Interagency Technology Assessment Program (IATAP)
- ✓ Other applicable oil spill response efforts
- OSPR JITF Alternative Technology Recommendation #2 (AT-2, Non-Incident Evaluation, Task 2)—The TWG's assessment of information-sharing strategies and incentives for substantive OSPR industry involvement, specifically the following:
 - ✓ The feasibility of developing a process that can serve as a transparent "clearinghouse" for sharing new ideas and technologies.
 - ✓ The possibility of incorporating incentives to facilitate the development of new oil spill response technologies.

An acronym list is provided in Attachment 1.

1.2 Background

The ARTES process was developed by Regional Response Teams (RRTs) II and III and has been hosted on the NOAA website since 2002. It was developed to assess whether a nonconventional oil spill countermeasure could be a useful response tool. It was designed to evaluate one potential response tool at a time and to assess the tool on its technical merits rather than on economic factors. ARTES is designed to work in concert with the National Contingency Plan (NCP) Product Schedule and the Selection Guide for Oil Spill Applied Technologies. A Response Technologies Specialist from within the Environmental Unit uses the ARTES process to evaluate new technologies. Between 2002 and the DWH incident, the ARTES process was used only a few times. In developing the recommendations provided in this document, the TWG reviewed the ART process used during the DWH incident, the DWH Interagency Alternative Technology Assessment Program (IATAP), and the Enbridge oil spill review process.

When the DWH response was initiated, the NOAA Scientific Support Coordinator (SSC) filled the ARTES role on behalf of the Federal On-Scene Coordinator (FOSC). However, the demands of vendors, operations personnel, and the media required that staffing be quickly increased, and personnel from the Coast Guard's Research and Development (R&D) Center and the Office of Spill Prevention and Response from the State of California were immediately activated.

As the spill continued, Unified Area Command (UAC) recognized that the evaluation and testing of alternative response technologies (ARTs) would be a critical component of the DWH response. The team that was set up to accomplish these tasks was simply called the ART Team. The scale and scope of the spill, the expectations of the public and political decision-makers, and the changing operational needs of responders required an unprecedented need for real-time technology review, evaluation/testing, and the development of an expanded approach to address these needs. The ART Team was led by a technical manager who addressed operational and technological response needs. The Team was also tasked with maintaining consistency within the overall response structure and scaling up, as needed, to process an unprecedented flow of ideas.

In the case of the DWH incident, vast numbers of unsolicited ideas were submitted by product vendors and the general public to the ART system. This encompassed not only non-conventional countermeasures (such as the use of biological and chemical oil spill cleanup agents) but also adaptations to conventional response techniques like skimming, booming, and beach cleaning. The advent of 24-hour news channels, social media, and electronic communications globally provided the platforms for the public to provide even more suggestions. The number of submissions rapidly exceeded 100,000 at a time when the response was still in the early stages. Submitters expected quick responses of resolution/assessment and, from a response perspective, the ART system met these expectations once it was staffed and fully functional.

It is becoming apparent that oil spills in the "Internet Age" will necessarily include a deliberate and robust external engagement element for technology screening and application. An interested public, if not the responders themselves, will insist on it. The expanding capability and interest in proposing solicited and unsolicited solutions poses new challenges for responders, who now must be prepared to sort through vast numbers of unfeasible solutions in a search for a relatively low number of potentially effective ideas. Recommended modifications of the RRT ARTES process are based on the DWH ART and IATAP experiences, as well as those of the Enbridge review process.

1.3 Proposed ARTES Process Enhancements

This document provides the TWG findings and proposes changes to the RRT ARTES process in an effort to position the FOSC to make fully informed decisions on whether or not to use new technologies, products, and ideas during an oil spill response. The TWG team members represent BP, ExxonMobil, Chevron, USCG, NOAA, the US Environmental Protection Agency (EPA), OSPR, and response contractors (O'Brien's Response Management, Lukins & Associates), virtually all of whom participated in the DWH response.

2 Task 1: Examining ARTES and Proposing Changes

The first task recommended for the TWG by the OSPR JITF involved evaluating the existing ARTES process based on its use during responses and proposing changes to the system.

2.1 Expanding ARTES/ART via Response Technology Evaluation (RTE)

2.1.1 Lessons Learned from the DWH Experience

Based on the DWH experience, several issues with existing mechanisms to review oil spill response (OSR) technologies were recognized. The main two are highlighted below:

- The pre-existing ARTES protocols for technology review were not scalable to the DWH event and were not specifically designed to review and test a range of mechanical/conventional technologies in addition to applied response technologies (also abbreviated ART).¹
- The pre-existing ARTES program, which embraced the potential for at least some limited technology review, had not been embedded in ICS.

These problems were magnified by the sheer scale of the incident and the overwhelming response of the public to requests by the Unified Area Command for technology ideas. The capability of previous protocols like ARTES was designed prior to the current version of the World Wide Web, with its modern robustness in bandwidth, pervasive presence, and social networking tools. As a result, ARTES evaluated applied response technologies on an almost one-by-one basis and would have been completely exceeded by the scope and scale of DWH technology review demands. Additionally, the ARTES protocols did not specifically address the inclusion and evaluation of mechanical/conventional response technologies.

Key improvements and tools to facilitate the response technology review and testing process were developed and implemented during the DWH response. These tools, which are explained in more detail later in this section, took full advantage of current web-based applications for sharing technologies, reviews, and field-test data. Database improvements and suggestions can be found in Section 2.3, submission process improvements can be found in Section 2.4, and testing improvements are at the end of this section.

To capitalize on these lessons learned, this TWG recommends enhancing the ARTES process based on the DWH ART experience as follows:

- Renaming the ARTES effort Response Technology Evaluation (RTE)².
- Embedding RTE as part of the ICS structure as its own unit within the Planning Section.
- Assigning the RTE Unit with the responsibility to collect, evaluate, and test both conventional and alternative (or non-conventional) response ideas.

A more in-depth recognition and expectation of how an RTE Unit can better fit within the ICS was also clearly recognized during the DWH response. Suggestions for how to “hard-wire” and improve RTE standing within ICS, while at the same time incorporating the positive improvements in technology solicitation, vetting, and testing developed during DWH, are the subjects of the following section.

2.1.2 Capturing Future RTE within the ICS Framework

During the course of an emergency response, the UAC or Incident Commander (IC) may receive an overwhelming number of requests to review new alternative response technologies or techniques to consider for implementation. Historically, these alternative response technology submissions would fall to the Environmental Unit under the Planning Section to address. Numerous submissions can limit the Environmental Unit from properly assessing and advancing spill response technology.

Establishing a sovereign Technical Specialist Unit under the Planning Section to aggregate, categorize, and prioritize these technologies for evaluation will allow the Environmental Unit to focus on their primary function. This unit is the proposed RTE.

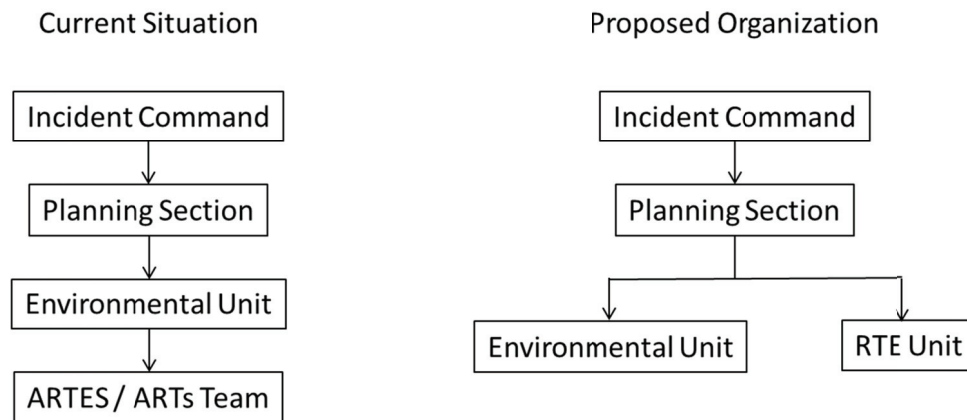
¹ Applied Response Technologies (also abbreviated “ART” in reference literature) is an exclusive term that should only refer to the use of in-situ burning of oil and the use of chemical and biological oil spill cleanup agents, such as dispersants. ARTES is an exclusive term that should be limited to describing the previous system for case-by-case review of ARTs. Both terms were used (conveniently but inappropriately) to describe the teams and processes for the broader technology review developed and used during DWH.

² The more inclusive and appropriate term for technology review systems that cover both mechanical/conventional and biological/chemical response technologies is Response Technologies Evaluation (RTE). We recommend use of this terminology going forward.

Several oil spill response functions have elements within the Planning and Operations Sections of the ICS. RTE will have significant elements in both Sections as well, along with at least one element in the Logistics Section.

The working group recommends that RTE placement within ICS be as a stand-alone unit within the Planning Section. This placement is modeled, as much as appropriate, after the SMART (Special Monitoring of Applied Response Technologies) Protocol³, developed by USCG and NOAA, and used in several responses, including DWH. The SMART Protocols outline many of the necessary coordination, tasking, and field-data quality assurance / quality control (QA/QC) steps that the RTE system will also need to address. Shoreline Cleanup Assessment Team (SCAT) and Wildlife are two additional groups that also cross over between Operations and Planning. RTE interactions should follow similar patterns.

A simplified ICS organization chart showing the recommended change in ARTES/RTE reporting relationships is included below.



Organizational charts showing RTE placement within the Planning Section of the ICS should clearly identify relevant positions for each tier (1, 2, and 3) of response. Plans should describe for each tier how coordination and communication processes will be managed among Planning and Operations Sections, Unified Area Command, and Liaisons (should multiple Incident Command Posts [ICPs] and a UAC be needed).

These positions for each tier of response are depicted in the ICS organization charts included in Attachment 2 and are described in general terms below. There may not be any need for RTE for a Tier 1 or Tier 2 event (Types 5, 4, 3, and 2 – see mapping in Attachment 2), but if it is included, only one (at minimum, the RTE Unit Leader or RTE Specialist) may be needed to cover multiple activities and still manage to address each of the functional areas described below.

It should be understood that what is described and depicted in this section for a Tier 3 (Type 1 - a full-scale, spill of national significance [SONS]) technology review is modeled after the approach used during the DWH response.

As a response scales up and the need for more robust RTE has been clearly identified, then the RTE work force will need to increase to cover several possible functional areas, even if that entire effort is still managed within one ICP. If a response grows to Tier 3 (SONS), with the potential for more than one ICP and a UAC, then RTE can also scale up appropriately using ICS principles.

2.1.3 Functional Areas for RTE Positions

The RTE should be an independent Unit within the Planning Section and should be led by an RTE Unit Leader. General tasks for the RTE Unit are described in Attachment 3. As a response scales up, separate

³ http://docs.lib.noaa.gov/noaa_documents/648_SMART.pdf

RTE positions (or teams if the response requires this level of effort) and Field Test Teams (FTT, internal or external to the ICP) may be established or identified by the RTE Unit Leader, as necessary, to focus on various functional areas, such as the following:

- Website management (technology idea receiving and input).
- Database management (screening and categorization of technology ideas).
- Mechanical response technologies review team(s) (e.g., containment, barriers, booming, skimming, oil-water separation, decanting, storage, tar ball/tar mat collection, surf washing).
- Applied response technologies review team(s) (e.g., use of chemical and biological oil spill cleanup agents [OSCA] such as dispersants, surface washing agents, solidifiers, elasticity modifiers, emulsion breakers, herding agents, bioremediants, and review of new or adapted in-situ burn technologies).

Note: Some of the mechanical/conventional and biological/chemical technologies may overlap, such as sand cleaning systems that are mechanical in nature, but use OSCAs as part of the cleaning cycle.

- Test protocol development. Considerations for test protocol development are included in Attachment 3.

Although bioremediation evaluations are typically part of an ARTES process and were included in the DWH ART's effort, the future handling of bioremediation is being addressed in the API Shoreline Treatment Reports (API SP-2 and SP-3). Therefore, it is not addressed in this report.

It is also recognized that in a SONS situation, the responsibility for dispersant, bioremediation and in-situ burning assessments/decisions may be handled by dedicated teams outside of the RTE (which is what happened during the DWH response) depending on the FOSC decision.

2.1.4 Deputy RTE Unit Leaders

As in the DWH experience, if additional ICPs are established to deal with a significant response, RTE Deputy Unit Leaders may be established (in addition to any Liaison position) at each additional ICP to oversee specific functions (e.g., field-testing). They report directly to and take direction from the RTE Unit Leader at the principal (or first) ICP established.

The RTE Unit Leaders or Deputy Unit Leaders may suggest and support vendor demonstration days for various technologies, and they may task their FTT with coordinating demonstrations.

The RTE Deputy Unit Leader(s) will accept direction from the RTE Unit Leader on any constraints or conditions of technology testing or use that might be imposed by outside agencies (e.g., RRT, trustee agencies). They will also ensure that the FTTs under the RTE Deputy Unit Leader's direction are observing those testing constraints and conditions. The RRT responsibilities are listed in Attachment 4.

2.1.5 Field Test Team (FTT)

The primary tasks of the FTT are to thoroughly and expeditiously test technologies and provide feedback to the RTE Unit Leader in the form of a recommendation. They review technology or proposed products and make an evaluation, based on their professional judgment. A product or idea's acceptance into this process, evaluation, or even testing does not mean the product will be used during the response. The FTT does not approve vendors for use during the response.

The FTT requires skilled, experienced response personnel able to work independently as well as part of a team to guarantee that the best strategies, tactics, and equipment are employed consistently during the course of an emergency response operation. For best operational results, the FTT should work within the ICS as directed by the RTE Unit Leader and be guided by the Incident Action Plan (IAP).

Safety must remain the primary objection of FTT personnel and be a constant consideration throughout any activity. FTT personnel need to be medically approved and trained for use with standard personal protective equipment (PPE), such as respirators, splash suits, hard hats, safety glasses and/or face shields, steel-toed boots, and weather-appropriate clothing.

Note: Fit-testing of Field Test Team members is recommended.

2.2 Additional DWH Experiences and Lessons Learned

The following are additional specific challenges that were recognized during the DWH response in regards to response technology review and testing:

- Limited early recognition for incident-driven response technology review within ICS.
- Internal and external confusion about multiple review processes (BP-ARTES, IATAP, EPA, local Emergency Operations Center [EOC]).

The newly created ART liaison positions lacked sufficient ICS recognition and, therefore, efforts to facilitate communication were hindered. To address this issue, the TWG recommends hard-wiring these positions into the ICS structure when required.

The public, vendors, politicians, and other agencies had the perception that the BP-led ARTES process was not sufficiently responsive; the response feedback system embedded in the database was not as clear, timely, or supportive as the submitters wanted it to be.

During the DWH response, roughly 123,000 technology ideas or suggestions were submitted and required evaluation/testing. A High-Interest Technology Test (HITT) Task Force was developed to perform this task and was based in Alabama. The Houma, LA, based ARTES team performed the same function.

The teams were challenged to review what were determined to be the best of those submissions. Further, the HITT and ARTES reviewed many submissions that were enhancements to existing technologies as opposed to completely new technologies. Team members were chosen because of their experience and expertise with emergency response, oilfield operations, environmental policy, and technical evaluation.

During the DWH response, both groups assessed, analyzed, and evaluated the usefulness of many submissions, in addition to their main role of conducting field tests of new technology ideas. Communication and coordination between the ARTES team in Houma, LA and the HITT Task Force in Alabama was sometimes difficult because of the physical distance between the two efforts effecting testing priorities, testing standard consistency and coordination with trustee agencies (US Fish and Wildlife Service, the National Marine Fisheries Services).

Given the difficulty of completing evaluating and testing tasks, the TWG recommends that the FTT primarily focus on the testing responsibilities. Communication and coordination issues can be addressed by establishing the RTE reporting relationships within the ICS structure as proposed.

Team members' responsibilities included contacting vendors to gather additional information on submissions, to obtain product samples (as appropriate), and to test/evaluate the products. Team members also documented the evaluation procedures and test results/findings and provided feedback to the submitter. State and federal agencies sometimes needed to be contacted to get permission to test in restricted areas, such as state parks. The HITT and ARTES testing did not guarantee that the technology evaluated/tested would be used; and this should be made clear to vendors during any future mobilization. This became an issue from time to time during the DWH incident because many vendors assumed that the evaluated technology, product, service would automatically be made available for use.

HITT positions deployed in Alabama during the DWH incident were not located within the Mobile Incident Command Post and thus were fully staffed with individuals filling positions such as Safety Officer, Public

Information Officer, and Documentation Lead. These positions are already included in ICS and, therefore, unless assigned independently of the Incident Command, should not be required for the RTE Unit under the Planning Section.

2.3 Database Use in the ART Process

2.3.1 ARTES Background

Before the DWH incident, the public submitted few technologies during a spill response. Spills rarely received much attention from the press and the average person did not possess the technology to interact electronically with the appropriate entity. Therefore, the ARTES process was originally set up with the expectation that submissions would be few and the paperwork would be minimal. As technology advanced, multiple methods of digital interaction became available and the public's ability to participate in a response grew in parallel. The ARTES process requires reevaluation to be able to handle a higher level of public input.

2.3.2 DWH Database and Evaluation Processes

Initial Issues

Within the first few days of the DWH response, it was recognized that an expansive, rigorous database was needed to hold and manage the public's suggestions, which were arriving by mail, telephone, Internet messages, and personal visits to the various command posts. In the beginning, many emails had very large file attachments (more than 10 MB) or multiple small ones that also added up to over 10 MB. In addition, paperwork that was scanned and submitted sometimes created large files. Additionally, submitters sent in product samples, DVDs, and other physical objects that had to be cataloged and linked to the appropriate record in the database. Lastly, submissions and telephone calls were received in multiple languages, which required translation and database input. Because multiple people from various organizations and locations needed to access this information, a password system was initiated and access to the database was provided via the Internet. This allowed responders from as far away as the United Kingdom and Alaska to sign into the database remotely to evaluate suggestions/ideas.

Identification of the Evaluation Stages

The following evaluation stages were used during the DWH ART response:

- Stage 1: Primary Evaluation, including feasibility classification / screening
- Stage 2: Idea Categorization (source control, bioremediation, other spill response categories)
- Stage 3: Advanced Technical Review, including determination of the need for further testing
- Stage 4: Operational Review (testing)

More information on the stages is provided in Section 2.4.1.

Standardized Process

The initial input was substantial and difficult to process. The ART Team realized that entering timestamps for each of the stages was crucial for processing and for future documentation. Separation of ideas for spill cleanup, source control, and offers for existing, standard equipment (e.g., boats) also had to be documented and forwarded to the appropriate database and people.

Inputting Data

Data could be input directly by individuals using the Horizonedocs Internet site, entered by Horizon Call Center staff receiving a telephone call, or copied and pasted from a message. A preliminary screen

(shown in Figure 2 of Attachment 6) was made available to the public to help educate them on issues that had already been addressed. Figure 3 of Attachment 6 is the idea submission form. This is the same approach that the US EPA used for the Enbridge Pipeline Spill (Figure 4 and Figure 5 of Attachment 6).

Processing Evaluations

Once the initial data were entered, evaluators could bring up a list, select a submittal, and perform an evaluation. If a submittal was determined to be an existing product, service, or piece of equipment (PSE), the submission was moved to a separate PSE database and made available to response Operations. If the submittal was for a new or alternative response idea, it was kept in the ART's database. In case questions about the evaluator's reasoning arose later in the process, the name and date of the evaluator were tagged to the recommendation whether to advance to the next stage. The list could be sorted by number or date of entry, and searches could be performed for specific numbers or technologies.

This database had a system to document the evaluation process and test results. Test results were attached to appropriate database records. Each stage of the review process had a separate screen, and evaluators were able to view the previous stage evaluation results when documenting the current stage. Testing prioritization scores were included in the database while the individual score for each criteria category was kept in a separate document or another database module.

Evaluation results were documented by the scores and comments recorded on the test sheets, which were kept separately. Lists were maintained of all the technologies/submissions that were in each of the evaluation stages. By the middle of the spill response, automated letters to the submitters were being generated.

Other data needs were identified during the evaluation process. At times, calls or emails were received from politicians or someone in the command structure to find out the status of particular submittals. Various search screens were developed that permitted anyone with a password the ability to search for a particular submittal or a class of submittals (e.g., mechanical response) from the FOSC or operations branch.

2.3.3 Recommendations

The following recommendations were derived from the use of the DWH database and are proposed requirements for any future RTE database:

- Maintain a record of all of the submittals including timestamps for all entries, changes, or updates. This is a crucial part of the RTE process. Tagging the evaluation to a particular evaluator may also be helpful.
- Should additional information be required to evaluate a submitter's idea, subsequent submissions providing this additional requested information should be linked back to the original database record and sent to the original evaluator (if possible).
- Make the database secure but flexible enough for access to multiple people at multiple locations.
- Design the database to correspond to specific stages in the evaluation process and to retain records on any testing performed.
- Develop a method for entering information from any government effort into the database. This may be needed after formal review, when the recommendation is forwarded to the FOSC.
- Make the entry format simple and provide minimum and maximum information levels. Include disclaimers for intellectual property (IP) issues, responsible-party (RP) issues, required confidentiality clauses, and types of and parameters for submissions. Include information about the need for ideas that are implementable and what types/areas of ideas are no longer being accepted. Possible keyword searches of submissions could be done when they are entering new submittal information.

- Include in the entry format explicit notice to the submitter that a submission does not create any contractual relationship between the submitter and any other response entity, including the RP.
- Build in the capability of an automated email reply to suggestion submitters after appropriate review stage decisions to maintain communication and establish transparency. Alternatively, possibly include a search portal for submitters to check submission status themselves.
- Build in capabilities for sophisticated searches by RTE members, including key words, record numbers, technologies, companies, email addresses, and individual's name.
- Ensure that a parallel equipment database is established and linked to critical resources and operations.
- Record and keep all parts of the technology evaluation (see Attachment 5) scores in the database.
- Ensure that the database is capable of storing and linking any field-testing results to the actual submission record.

The following recommendations also resulted from the analysis of the DWH review process:

- Hard-wire the newly created RTE liaison positions into the ICS structure when required.
- Establish RTE reporting relationships within the ICS structure, which can address communication and coordination issues.
- Communicate clearly to vendors that FTT and RTE testing does not guarantee that the technology tested will be used.

2.4 Submission Review Process

The ARTES process issued in 2002 was designed for evaluating one non-conventional spill response idea or product at a time. As mentioned previously, given the new public perception that they should be allowed to suggest an unlimited number of conventional and non-conventional spill control and cleanup options, a review system needs to be designed to handle multiple suggestions during an on-going response without burdening the response Operations Section staff. During the DWH response, the public submitted more than 120,000 ideas over a 5-month period, and each of these ideas had to be screened; then, many of them were evaluated further and ultimately tested in near real time. The ART Team identified ideas that had potential merit while also communicating with the submitters to ensure them that their ideas were being considered and acted on in a timely manner. This section will address the DWH ART and two Environmental Protection Agency (EPA) efforts—the DWH and Enbridge oil spill submission review processes. The IATAP system will be described in a separate section of the report.

2.4.1 DWH ART Process

The submission review process used by the UAC during the DWH response was a four-stage process with subsequent, more detailed technical reviews by specialists, which resulted in a decision to field-test the idea if it warranted and met current operational needs. Due to the duration and complexity of the response, non-conventional oil spill ideas as well as modifications to conventional spill response equipment and techniques were submitted. The ART process implemented was designed to handle both. The four-stage process is described below.

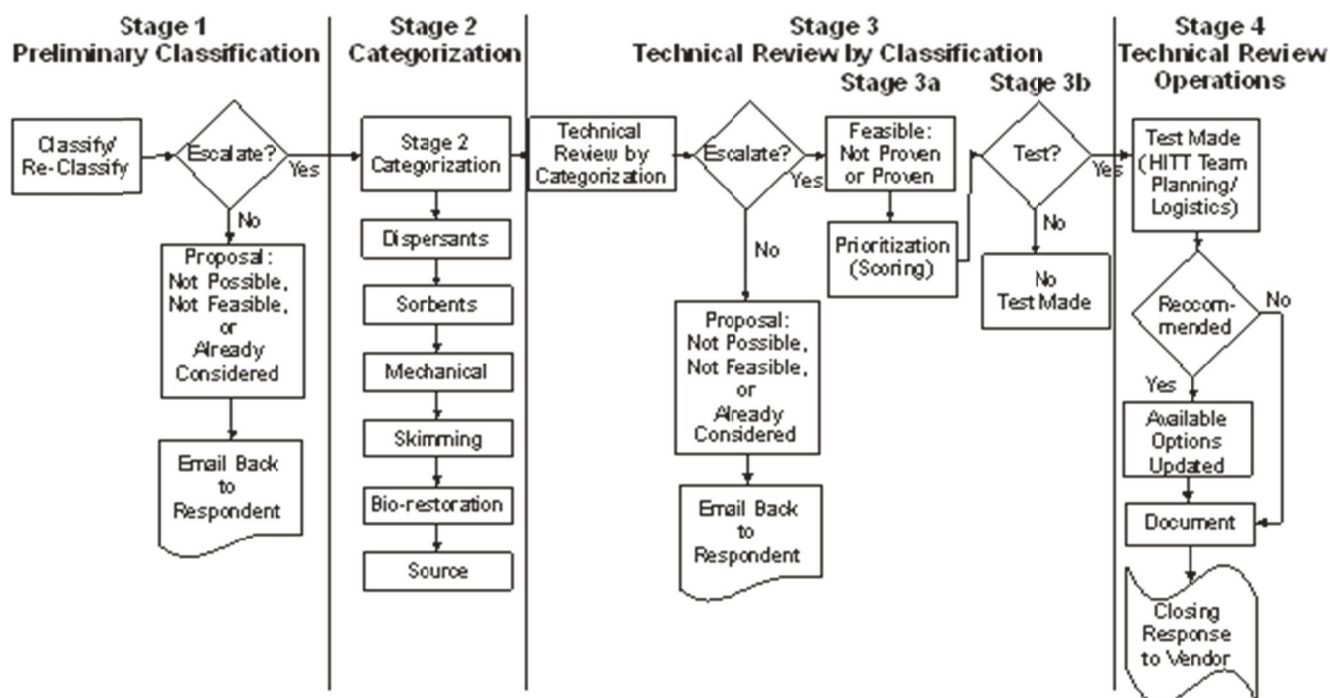


Figure 1: Four-stage ART process.

- Stage 1: Primary evaluation of the technology submission was conducted at this stage by a trained team of evaluators with various backgrounds. The number of evaluators depended on the pace of submissions and the speed at which decisions needed to be made. If a submittal was determined to be “not feasible,” “not possible,” “previously considered,” or simply “advice” (see definitions on following page), it was not escalated to Stage 2 and an automated email was sent to the idea submitter thanking them for their submittal.
- Stage 2: This stage categorized proposals in two ways—whether the submission addressed stopping the oil release at the source, or whether it addressed oil spill cleanup. The second categorization further delineated the oil spill cleanup submissions into the following categories: dispersant, chemical, sorbent, mechanical, skimming, biorestorement, or other.
- Stage 3: If a submission merited further consideration based on the Stage 2 evaluation, a more in-depth review was conducted by specialized technical experts. The goal of this phase was to determine which submissions could assist in achieving the response objectives most efficiently. A scoring methodology was developed and used by the technical experts to facilitate the prioritization of submittals. Submissions were scored in Stage 3A and prioritized in Stage 3B for testing based on current response operational needs.
- Stage 4: The final stage for submissions that received more specialized review involved field-testing, recording performance, and an assessment of whether or not the technology could help satisfy the response objectives. Closing responses on whether technology was successfully tested and recommended for response use or not were then sent back to the submitter from the ART Technical Manager.

Within the proposed RTE Unit, Stages 1, 2, and 3 would be the responsibility of the Technology Review Team(s) while Stage 4 responsibilities would fall to the FTT(s).

A summary of the 5-month DWH ART process is provided below.

The ART team received and evaluated about 123,000 individual ideas, suggestions, and proposals for ending the DWH well flow (80,000 suggestions) or cleaning up the resulting spill (43,000 suggestions).