



**Wendy Schmidt Oil Cleanup X CHALLENGE
Competition Guidelines
21 March 2011, version 11**

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1. Overview

While many important efforts are devoted to the development of new, cleaner, and renewable energy sources, the world remains fundamentally dependent on oil to drive many sectors of our economies. As long as oil continues to be a significant energy source, the risks associated with accidental release of oil will continue to pose a threat that must be managed.

Breakthroughs are needed to increase the efficiency and scope of efforts to clean up oil spilled into the environment. Technical barriers stand in the way, including the limited effectiveness of separation technologies, as well as a wide range of environmental conditions from wave action and temperature variation, to sediment and shoreline types.

Bold new creative approaches are needed to make breakthrough oil spill cleanup technology commercially available. Technology advances could speed the pace of response to a spill. With faster, more effective cleanup at the point of a spill, much of the impact caused by an accidental oil release could be prevented.

The goal of the Wendy Schmidt Oil Spill Cleanup X CHALLENGE (the “Competition”) is to inspire a new generation of oil spill cleanup technologies that enable a more rapid pace of cleanup and broaden the environmental conditions under which oil spill cleanup can take place.

This Competition is designed to demonstrate new spill removal system technologies, advance systems for the removal of oil from the surface of the ocean, and improve the performance of existing skimmer/boom systems technology. The Competition will award a prize purse of \$1,400,000 USD to the teams that complete the best technology demonstration of the removal of test oil in a test environment with salt water and wave conditions specified in the OHMSETT Field Testing Procedures (Appendix I). The test environment will be an experimental oil removal tank (National Oil Spill Response Research & Renewable Energy Test Facility in Leonardo, New Jersey, USA, or “OHMSETT”). During Field Testing, the teams that the Judging Panel selects for participation in Field Testing (“Finalist Teams”) must demonstrate an average oil recovery rate (ORR) of at least 2,500 GPM (approximately 35,714 barrels of oil per day, based on a 10 hour operating period) from an oil spill of 1-inch thickness, with an average oil recovery efficiency (ORE) rate of at least 70%.

In order to participate in Field Testing, teams must prove to the reasonable satisfaction of the Judging Panel (through information provided in Competition Submissions) that their technology can be commercialized, is deployable in a real-world spill environment, and achieves low environmental impact. The Judging Panel will narrow the field of registered teams down to up to ten Finalist Teams based on Competition Submissions. Only full-scale equipment and systems will be accepted for Field Testing in the Competition.

The Finalist Teams’ demonstrated results from the test environment will be used by the Judging Panel to establish first, second, and third place. The winner of the First Place Prize will be

awarded \$1,000,000 USD, the winner of the Second Place Prize will be awarded \$300,000 USD, and the winner of the Third Place Prize will be awarded \$100,000 USD.

These Guidelines summarize the high level requirements and rules of the Competition and are binding on teams as referenced in the Master Team Agreement. Additional requirements are included in the OHMSETT Field Testing Procedures (Appendix I) and additional details will be published as appropriate. There may also be unanticipated issues that arise and require modifications to these Guidelines. Thus, X PRIZE Foundation, Inc. ("XPF") reserves the right to revise these Guidelines as appropriate. In all cases, XPF will endeavor to remain true to the spirit of these Guidelines and to the guiding principles summarized in the next section.

2. Guiding Principles

XPF has designed the Wendy Schmidt Oil Cleanup X CHALLENGE so that it adheres to the following principles:

- Achieve our main goals: inspire a new generation of oil spill cleanup system technologies that help speed the pace of cleanup and broaden the environmental conditions under which oil spill cleanup can take place
- Stimulate the development of new options for oil spill response
- Be simple to understand and easy to communicate
- Remain independent, non-partisan, and technology neutral, treating competitors with equality and fairness
- Attract a balanced set of donors, sponsors, and partners to help competitors succeed
- Provide many opportunities for recognition so that it is worthwhile to compete whether or not a team places first
- Make heroes out of the competitors and winner(s) through widespread exposure, media coverage, and a significant cash award
- Educate the public on key issues related to oil spill cleanup

The Wendy Schmidt Oil Cleanup X CHALLENGE organizers and sponsors are entering into this Competition in good faith. We expect and require the same attitude from all competitors and participants, so that together we can provide the most favorable experience for all.

3. Competition Outline, Terms, and Conditions

3.1. Prize Criteria and Prize Payment

A **\$1,000,000 USD first place prize purse** will be awarded to the team that can demonstrate the highest average ORR above 2,500 GPM (approximately 35,714 barrels of oil per day, based on a 10 hour operating period) from a spill of 1-inch thickness on the seawater surface, with an average ORE of at least 70%.

A **\$300,000 USD second place prize purse** will be awarded to the team that can demonstrate the second highest average ORR above 2,500 GPM from a spill of 1-inch thickness on the seawater surface, with an average ORE of at least 70%.

A **\$100,000 USD third place prize purse** will be awarded to the team that can demonstrate the third highest average ORR above 2,500 GPM from a spill of 1-inch thickness on the seawater surface, with an oil recovery efficiency rate of at least 70%.

For purposes of awarding prizes, each Finalist Team’s average ORR and ORE will be based on the Finalist Team’s average performance across six “Qualifying Test Runs,” which must include: (i) three test runs in calm water in which ORR deviates by not more than 20% of the arithmetic mean and in which ORE exceeds 70% and (ii) three test runs in wave conditions in which ORR deviates by not more than 20% of the arithmetic mean and in which ORE exceeds 70%.

Teams will only be paid upon winning the Competition’s First, Second, or Third Place Prizes. Winning teams will be paid these Prizes per the terms of the Master Team Agreement and teams will not receive payment for preparation or participation in the Competition. Teams are solely responsible for their own costs.

If no team achieves above 2,500 GPM, the Judging Panel reserves the right to reassess the minimum oil recovery rate. If there are statistical ties in the sole and absolute discretion of the Judging Panel, prizes will be awarded according to the tie breakers and procedures set forth in the Master Team Agreement.

3.2. Competition Schedule

The Competition will occur in two phases: Phase I (Submissions) and Phase II (Field Testing). An overview of the Competition timeline is provided below.

1 August 2010	Launch and pre-registration
PHASE I: Submissions	
27 October 2010	Registration opens
15 February 2011	Registration deadline
4 April 2011	Submissions deadline
5 April 2011-19 April 2011	Review and selection Finalist Teams (up to 10)
20 April 2011	Formal announcement of Finalist Teams

PHASE II: Field Testing	
21 April 2011 – 21 July 2011	Finalist Teams design, build, and perform optional trials at OHMSETT
22 July 2011- 4 October 2011	Field testing of up to 10 Finalist Teams' solutions at OHMSETT
By 15 November 2011	Awards Ceremony

3.3. Who Can Participate?

To be eligible to compete and claim any prize, a team must be an Eligible Entity, as defined in the Master Team Agreement, and must otherwise comply with all the terms of the Master Team Agreement. The Master Team Agreement also contains a number of restrictions on potential entrants that are intended to prevent conflicts of interest. Potential teams are also subject to these restrictions. Further, current employees of Shell International B.V. or any of its group of companies may neither participate in nor have financial interest in any Team.

One person must be designated as the Team Leader and will be responsible for receiving communications from and communicating with XPF.

The Competition is void in those countries where prohibited or restricted by law. XPF reserves the right to limit, or restrict upon notice, participation in the Competition to any person or entity at any time for any reason.

A team may withdraw from the Competition by written notice to XPF, at any time.

3.4. Judging Panel

The official judges of the Competition will be called the "Judging Panel." The Judging Panel will be responsible for evaluating compliance with these guidelines and rules. The Judging Panel will also have the sole and absolute discretion to select the prize recipients. The decisions of the Judging Panel are final, binding, and cannot be subject to challenge.

The Judging Panel will be comprised of highly qualified and impartial judges. XPF shall name all members of the Judging Panel. Members of the Judging Panel will have relevant backgrounds in order to ensure that the Judging Panel will be able to address all of the requirements of the Competition.

All determinations, exercises of discretion, and decisions made by XPF or the Judging Panel may be made in XPF or the Judging Panel's sole and absolute discretion, including without limitation, the award of prizes. All decisions and opinions made by the Judging Panel shall be rendered by a majority of the judges and are binding on both all teams and XPF, and not subject to review or

contest. The Judging Panel retains sole and absolute discretion to declare a winner of the Competition and otherwise award all prizes. Any such decision may not be challenged by the teams.

All members of the Judging Panel will be required to sign Non-Disclosure Agreements, as well as statements acknowledging that they make no claim to the intellectual property developed by teams or relevant team sponsors or partners.

3.5. Official Language and Currency

The official language of the Competition is English. All communications with XPF must be in English unless a team has received prior written permission from XPF.

All references to a currency are references to United States Dollars (USD).

3.6. Registration

To participate in the Competition, teams must accurately and truthfully complete the Registration process online at the Competition website (www.iprizecleanoceans.org). Teams must complete the Registration process by 11:59 p.m. Pacific Standard Time, 15 February 2011.

To register, teams must fill out the Registration Form, which requires the following:

- Team name
- Team leader's name and basic information
- Team logo
- List of all Team Members, providing each Team Member's full name, e-mail address, phone, mailing address, affiliation, if any, and country
- A quote about the Wendy Schmidt Oil Cleanup X CHALLENGE (150 word statement expressing your views on the importance of the Wendy Schmidt Oil Cleanup X CHALLENGE that can be used on the XPF website, as well as in marketing and promotional materials)
- A brief technical description of the proposed solution (up to 3 pages long)

Teams must sign and complete an unrevised Master Team Agreement, and each Team Member (as defined in the Master Team Agreement) must sign a complete and unrevised Team Member Release, Waiver, and Confidentiality Agreement. A team is not eligible to compete or receive prizes unless and until these documents are provided to XPF and accepted by XPF, as described below and in the Master Team Agreement. The Master Team Agreement will be available for teams to review by 21 March 2011.

Teams must submit the Registration Fee at the time of Registration. The Registration Fee is \$3,500 USD, payable in U.S. Dollars only. The Registration Fee will not be refundable once XPF has accepted and executed Team's Master Team Agreement. If XPF has not received a signed,

unrevised Master Team Agreement by 11:59 p.m. Pacific Daylight Time, 4 April 2010 from a team, the X PRIZE Foundation will refund any Registration Fee submitted by the team and will disqualify team from the Competition.

Registration must be approved and accepted by XPF in order for a team to compete and be eligible to receive any prizes. XPF may refuse Registration for any reason, including, but not limited to XPF's determination that a prospective team: (i) lacks the understanding of the financial or technical means required to present a viable Entry; (ii) is not or will not remain an Eligible Entity; (iii) is not likely to comply with the terms of the Master Team Agreement; or (iv) is likely to disrupt relationships with the other teams, sponsors, or otherwise unreasonably endanger the administration of the Competition or related activities. Registration materials, including the Registration Form; the Master Team Agreement; the Team Member Release, Waiver, and Confidentiality Agreement; and the Registration Fee, will be reviewed by XPF for completeness and for compliance with the principles and rules of the Competition using all available information. XPF may pose additional questions or requests for clarification to supplement the Registration materials as part of its evaluation. All rejection or acceptance decisions by XPF will be final and its sole and absolute discretion.

4. Competition Structure

This is a two-phase incentivized Competition that will allow teams to demonstrate novel oil spill cleanup system technologies that help speed the pace and effectiveness of cleanup and broaden the environmental conditions under which oil spill cleanup can take place.

4.1. Phase I: Completion of Competition Submissions

Once registered, teams may access the official Competition Submission Form. The Competition Submission Form requires each team to provide the following information by 11:59 p.m. Pacific Daylight Time on 4 April 2011:

- **Technical Approach:** Provide a technical description of the proposed solution including any necessary diagrams, supporting photos, and/or video, etc. Content should include any previous testing and evaluation data that validates success of this technical approach, if available. Describe the plan for commercializing this technology to meet market demand.
- **Rough Order of Magnitude (ROM) Cost Estimate:** The ROM cost estimate must consist of Team's best estimate of the anticipated cost of the total materials, systems, and effort for a stated unit of the system (e.g. total cost of the system, dollar/barrel of oil) that is to be commercialized. This cost should include all labor, equipment, fabrication, consumables, etc. Please note on the Bill of Materials any parts which are unique aspects of the system that may drive the cost up when commercialized.
- **Environmental Impact:** Describe how the solution minimizes environmental impact during operations and separation. Describe specific components of the solutions that could conceivably require further review of possible environment impact.

- **Competition Phase II Deployment:** Describe how the solution will be deployed at the testing Facility no later than 18 July 2011.
- **Real-world Deployment and Mobilization:** Describe a conceptual Emergency Response Plan wherein the solution can be deployed to a real-world spill site, at a specified distance from the team’s headquarters, within a specified time period, in compliance with an existing regional emergency response plan.
- **Baseline Performance:** Describe the solution’s ability to recover at least 2,500 GPM or approximately 35,714 barrels of oil per day in a 10 hour period from a spill of 1-inch thickness, at an oil recovery efficiency rate of at least 70%.
- **Estimated ORR and ORE:** The two performance measurements to be submitted are :
 1. **ORR:** Total volume of oil recovered by the device per unit of time (water that is recovered along with the oil is not included in this calculation).
 2. **ORE:** The ratio of the volume of oil recovered to the volume of total fluid recovered. These are resolved using the following formulae:

$$\text{ORR} = \frac{V_{\text{oil}}}{t} \quad (1)$$

$$\text{ORE} = \frac{V_{\text{oil}}}{V_{\text{total fluid}}} \times 100 \quad (2)$$

Where:

- ORR = Oil Recovery Rate, gallon/min (GPM)
- V_{oil} = Volume of oil recovered, gallon (decanted and lab corrected)
- t = Elapsed time of recovery, minutes
- ORE = Oil Recovery Efficiency, %
- $V_{\text{total fluid}}$ = Volume of total fluid (water and oil) recovered

- **Team Biographies:** Provide a short (one paragraph) biographical description of each Team Member and a listing of funding partners or sponsors.

XPF will provide additional details to assist teams in answering the Competition Submission Form questions as deemed necessary in the sole and absolute discretion of XPF.

At the end of this period, eligible submissions will be judged (see Phase I: Judging below). An eligible submission provided for review must describe a solution that is originally developed or implemented (e.g. must not violate or infringe on any applicable law or regulation or third-party right). Eligible solutions can include: skimmer systems, skimmer & boom systems, on-ship mechanical, on-ship separators, in-water mechanical, in-water separators, or a novel system. The following solutions are not eligible for the Competition: solutions that involve changing the chemical characteristics of the oil in the ocean, releasing biological/chemical

agents to degrade the oil in the ocean, placing sorbents or other material on the water surface, applying dispersants, and related applications.

If no qualifying submission can be verified at the completion of Phase I, the Competition may reopen to new teams, at the sole and absolute discretion of XPF, and new Competition Submissions from any team will be considered according to the protocol described above.

4.2. Phase I: Judging

Team Submissions will be evaluated based on the following weighted criteria:

Criteria	Weighting (Percent of Total Score)
Feasibility of technological approach and commercialization plan including real-world deployment and mobilization	70%
Ability of technology to improve over the baseline level of performance	30%
ROM cost of approach	GO – NO GO
Ability to minimize negative environmental impact	GO – NO GO
Ability to deploy the system technology during Phase II of the Competition	GO – NO GO
Total	100%

The description of the solution provided by each team in the Competition Submission Form must include any diagrams or supporting material as necessary. The description must be written at a level appropriate for a practitioner in engineering to understand and verify.

Teams shall reasonably cooperate with the Judging Panel in any verification activities. Application of the judging criteria to eligible Competition entries will be at the Judging Panel's reasonable discretion and, as to elements of the judging criteria involving matters of subjectivity, at the Judging Panel's sole and absolute discretion.

The Judging Panel may select up to 10 Finalist Teams to enter into Phase II of the Competition. A description of each Finalist Team's Entry, but not any proprietary data, will be published on the XPF website, along with the names and biographical information of the Team Members of the Finalist Teams.

A summary public announcement regarding the Finalist Teams will take place on or about 20 April 2011.

4.3. Phase II: Field Testing

Once selected, Finalist Teams will mobilize and prepare for a demonstration of their technology. The demonstration of their solution will be performed at OHMSETT during Field Testing.

If Finalist Teams are interested in performing any optional trials of their technology at OHMSETT facility prior to the start of Field Testing on 22 July 2011, Finalist Teams may negotiate access to the facility with OHMSETT directly. These teams will be responsible for paying all testing fees related to their optional trials.

XPF will assign the Finalist Teams a nine day testing period between 22 July 2011 – 7 October 2011.

Finalist Teams' systems must be delivered to OHMSETT, or be en-route with proof of shipping, submitted to XPF, by 18 July 2011. Finalist Teams must provide to XPF a detailed list of what is in each container sent by Finalist Team to OHMSETT by 18 July 2011. Systems may not be delivered to OHMSETT earlier than 1 June 2011. The maximum size and quantity of shipping containers accepted by OHMSETT will be two 20 foot dry containers per Finalist Team, with no individual container weighing more than 10,000 pounds. Finalist Teams may request exceptions to these shipping restrictions from XPF by providing weight, dimensions, quantity, and other relevant details regarding the exceptions requested, to be approved at the sole and absolute discretion of XPF. If a Finalist Team does not provide proof of shipping to XPF by 18 July 2011, the Finalist Team will be disqualified from competing in the competition or winning any of the competition's prizes. If the Finalist Team's system does not arrive at OHMSETT by 72 hours prior to the start of the Finalist Team's assigned testing window, the Finalist Team will be disqualified from competing in the competition or winning any of the competition's prizes.

OHMSETT personnel will be responsible for unloading the shipping containers and placing the containers at the storage location. Just prior to the Finalist Team arriving onsite, OHMSETT personnel will move the Finalist Team's containers to the staging area where the Finalist Team will prepare and set up their system for testing.

Each Finalist Team will be allowed up to 12 Team Members (operations, technical, designers, mechanics, instrumentation, etc.) to attend the testing and operate their system. Each Finalist

Team must send a minimum of 2 Team Members to attend the testing and operating their system.

Finalist Teams will be responsible for paying all costs, travel, and miscellaneous expenses including transportation and customs for getting their equipment and Team Members to the testing site at the OHMSETT facility in Leonardo, New Jersey, USA. Finalist Teams will also be responsible for their own lodging, meals, Personal Protective Equipment (“PPE”), and other related expenses for Team Members participating in the Competition. XPF will be responsible for all costs associated with the OHMSETT facility, tank, facility personnel, and Judging Panel, as well as the oil for the Finalist Teams’ tests.

Finalist Teams must arrive onsite by 7:15 a.m. Eastern Daylight Time or other time specified by XPF on the first day of their assigned testing period (and no earlier than 7:00 a.m. Eastern Daylight Time), go through facility security and safety briefing procedures, and begin deploying their solution at OHMSETT. Finalist Teams must arrive onsite at OHMSETT having passed through facility security by 7:15 a.m. Eastern Daylight Time or other time specified by XPF (and no earlier than 7:00 a.m. Eastern Daylight Time) on each of the remaining 8 days of their assigned testing period. Finalist Teams must participate in a daily safety briefing and team meeting at a time specified by XPF. Finalist Teams must depart the OHMSETT facility by 8 p.m. Eastern Daylight Time each day of their assigned testing period unless prior permission for a later departure time is given by XPF.

Team and Team Member vehicles may be inspected by XPF upon each arrival at the facility to ensure no unapproved parts, components, or sub-systems are brought by Team onto the OHMSETT facility.

The first two days at OHMSETT will be used for set-up and preparatory work outside of the test tank as detailed in the OHMSETT Field Testing Procedures (Appendix I). OHMSETT will have an engineer and a technician available for each Finalist Team for assistance at the direction of the Team Leader and also to document on the Finalist Team’s set-up and review the logistics of the rigging plans with the Team Leader. The Finalist Team must prepare, submit to XPF 10 days prior to arrival at OHMSETT, and review with OHMSETT personnel a staging rigging plan that details the steps and process to place the system into the test pool. The Finalist Team must also prepare, submit to XPF 10 days prior to arrival at OHMSETT, and review with OHMSETT personnel an in-tank rigging plan that details how the system will be connected and tethered once in the test pool. OHMSETT will not assist with setting up the equipment outside of the test pool unless explicitly asked and authorized by the Team Leader. This assistance will be limited to lifting and unloading from the Finalist Team’s container(s) and rigging on hard surfaces.

The third and fourth day of the Finalist Team’s testing period at OHMSETT will include the lifting of the Entry into the test tank in accordance with the staging rigging plan provided by the Finalist Team, rigging the Entry in the OHMSETT test tank in accordance with the in-tank rigging

plan provided by the Finalist Team, and performing preliminary optimization runs. When it is time to place the equipment into the test tank, OHMSETT personnel will operate the crane to lift the equipment into the testing tank according to the staging rigging plan provided by the Finalist Team and will, when necessary, perform connections which are necessary by workboat in the water according to the in-tank rigging plan provided by the Finalist Team. It is the Finalist Team's responsibility to perform any connections to be made on either of the bridges.

The fifth day of the Finalist Team's testing period at OHMSETT will include a minimum of three and a maximum of four official test runs in calm conditions, as detailed in the OHMSETT Field Testing Procedures (Appendix I).

The sixth day of the Finalist Team's testing period at OHMSETT will include a minimum of three and a maximum of four official test runs in wave conditions, as detailed in the OHMSETT Field Testing Procedures (Appendix I).

Official test runs will begin at 8 a.m. Eastern Daylight Time and no tests will start after 3 p.m. Eastern Daylight Time without approval of the Judging Panel in accordance with the OHMSETT Field Testing Procedures (Appendix I) and at the Judging Panel's sole and absolute discretion.

Conditions in the testing tank will be similar to seawater, with temperature, humidity, and wave height to be specified. Oil slick conditions will be comprised of a spill of 1-inch thickness of test oil in the tank. More specific test parameters, procedures, and standards can be found in Section 7 and 8 of these Guidelines, in the OHMSETT Field Testing Procedures (Appendix I), and the other appendices.

The seventh through ninth day of the Finalist Team's testing period at OHMSETT will include disassembly, cleaning, and packing as specified in the OHMSETT Field Testing Procedures (Appendix I). After testing, OHMSETT personnel will again use the workboat to perform any disconnections in the water according to the in-tank rigging plan and the Finalist Team will perform any disconnections on either bridge. OHMSETT personnel will operate the crane to remove the system from the tank and move the equipment to the decontamination and clean-up area. While it is the Finalist Team's responsibility to disassemble their equipment, OHMSETT personnel will perform decontamination and clean-up to ensure adherence to any facility procedures. Each Finalist Team will be given two days for decontamination and clean-up. The Team Leader will need to approve the cleaning. Each Finalist Team must pack their system for shipment.

Each Finalist Team's equipment must be removed from OHMSETT premises by the end of the first day after the Finalist Team's testing period at OHMSETT (for clarity, the tenth day).

One Finalist Team will not be allowed to monitor or observe the testing of another Finalist Team's Entry in the tank.

4.4. Phase II: Judging

The winners of the First, Second, and Third Place Prizes will be determined in accordance with the criteria found under Section 3.1 using the testing procedure and test standards summarized in Sections 7 and 8 and detailed in the Appendices and the judging and tie-breaking processes specified in the Master Team Agreement.

If no Finalist Team meets the competition minimum, the Judging Panel will evaluate how close the Finalist Teams were to meeting the criteria found under section 3.1. The Judging Panel retains sole and absolute discretion to declare a winner of the Competition and otherwise award all prizes. Any such decision may not be challenged by the teams. If no team in the Competition fulfills all such requirements, but the Judging Panel determines, in its sole and absolute discretion, that a team or teams has or have substantially fulfilled such requirements, it may award prizes to one or more such teams.

5. Health, Safety, & Environment/Security

Finalist Teams will be required to register all Team Members for attendance at the OHMSETT facility. All Team Members present at OHMSETT must participate in all training and briefings required by XPF and the OHMSETT facility, including daily safety briefings and team meetings. In addition to complying with applicable law and regulations, each Finalist Team is expected to employ appropriate safety precautions in its Competition operations. All Team Members must wear proper PPEs, including steel toe, slip resistant safety work shoes and long pants. In the event that the Judging Panel or OHMSETT personnel observe a patently dangerous condition for the safety of personnel or the environment, XPF shall have the right to suspend or disqualify a Finalist Team from competing and/or to advise a Finalist Team that, until the condition is corrected, a test undertaken by the Finalist Team must cease and will not be eligible as a valid Competition test attempt.

Each Finalist Team must fill out and return the appropriate security forms at least eight (8) weeks prior to the Finalist Team's visit to the testing facility as the OHMSETT Facility is located in a U.S. military installation with very strict security requirements. These security forms will be provided to Teams by XPF and must be completed and submitted to XPF.

6. Equipment Decontamination

The OHMSETT staff will be responsible for decontaminating equipment after testing in the secondary containment area. Each designated Finalist Team representative will be responsible for inspecting their testing equipment prior to packing their system for transport upon departure.

7. Testing Procedure

A summary of the Testing Procedure is included below. The full Testing Procedure is found in the OHMSETT Field Testing Procedures (Appendix I).

- Qualifying Test Runs are the Finalist Team's 3 official test runs in calm water surface conditions and 3 official test runs in wave conditions in the tank that have the highest ORR of the Finalist Team's official test runs, that have an ORR within 20% of arithmetic mean, and that have at least 70% ORE
- If a Finalist Team does not complete 3 calm and 3 wave Qualifying Test Runs, the Finalist Team will not be considered by the Judging Panel to have completed Field Testing and will not be eligible to win the first, second, or third place prizes
- The average ORR from the Finalist Teams' Qualifying Test Runs will be used to establish first, second, and third place (tie-breaking procedures are specified in the Master Team Agreement)
- Oil coverage/slick thickness is that of 1.0 inch over entire tank
- Initial oil volume to be placed in the OHMSETT test tank of 667' length: 1.0 inch thickness, 60' width; approximately 665 barrels
- ORE minimum 70% per ASTM Standard F2709
- ORR – target of 2,500 GPM ORR minimum
- Test duration is 30 seconds minimum
- System tow speed is at 1 Knot minimum and 4 Knot maximum; optimal speed will be found during optimization tests
- Maximum length of test tank area for testing is 400 feet
- Swath width is 60' maximum
- Skimmer discharge:
 - Facility will accommodate 10" flange (connections provided by Finalist Team must mate to 10" flange)
 - Hydraulics and power supplies (HPU) and all ancillary hoses and fittings to be provided by Finalist Team (i.e. turn-key)
 - Finalist Team to provide specifications with their submittal
- Calm conditions
 - The Finalist Team will optimize speed and settings in calm conditions
- Wave conditions
 - The Finalist Team will optimize speed and settings in wave conditions which will be determined by a cycle or period of 1 to 4 seconds between waves and considered random in nature.

- Wave length will be 8' to 10' as defined in the OHMSETT Field Testing Procedures (Appendix 1)
- Wave is 1' in height (h1/3) as determined in the OHMSETT Field Testing Procedures (Appendix 1)
- Test oil is HYDROCAL 300; If any changes are required based on availability, XPF will notify all teams
 - Hydrocal 300 physical and chemical properties:
 - Specific gravity: 0.9053
 - Density: 7.55 lbs/gal
 - Appearance: Begins as reddish brown liquid, turning to clear, pale straw to water white, viscous liquid
 - Odor: Ught bland petroleum
 - Physical State: Liquid
 - Boiling point: IBP >526°F >274°C
 - Melting point: -52°F -45°C ASTM D97
 - Vapor pressure: <0.0001 mm Hg @ 20°C
 - Vapor density (Air=1): >5 Air=1
 - Specific gravity: 0.905~ Water = 1
 - Molecular weight: *N/A*
 - Solubility (H2O): negligible in water
 - Viscosity: 307.5 SUS at 100°F
 - XPF will provide teams with the MSDS & Specification Sheet by 21 March 2011
 - XPF will provide teams with the available pertinent history of average water and air temperatures in the OHMSETT test tank by 21 March 2011

8. Test Standards

These tests standards will be used in part during testing:

8.1. X PRIZE Foundation

- OHMSETT Field Testing Procedures for the Wendy Schmidt Oil Cleanup X CHALLENGE (Appendix I)

8.2. ASTM

- F2709 Standard Test Method for Determining Nameplate Recovery Rate of Stationary Oil Skimmer Systems (Appendix II)
- F1780 Standard Guide for Estimating Oil Spill Recovery System Effectiveness (Appendix III)
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- D1796 Standard Test Method for Water and Sediment in Fuel Oils By the Centrifuge Method (Laboratory Procedure) (Appendix V)

8.3. U.S. Coast Guard

- U.S. Coast Guard Oil Spill Removal Organization Classification Program Guidelines (Appendix VI)