

2010 FIELD IMPROVEMENT – SHALLOW WATER OSCAR

PROBLEM:

Existing oil spill equipment is primarily designed for use in surface water with a depth of > 1m³; in WCSS's jurisdictional area there is an abundance of surface water with a depth < 1 m³.

PRESENT STATE OF THE ART:

- Equipment deployment sites are selected where we have adequate water depth.
- WCSS has acquired a limited supply of shallow water boom; additional field testing required.
- Sorbent boom and pads/blanket is often used to recover residual hydrocarbon in surface water.



Shallow water boom



Sorbent and straw filter fence

- Most training has been done in surface water with a depth > 1m³.
- We have utilized Turner Valley Gates at several training exercises and they have been deployed successfully at several spill responses.



Turner Valley Gates

Petroleum Industry's Commitment to Spill Preparedness and Environmental Protection

Zurich Court, 1538 - 25th Avenue N.E.
Calgary, Alberta T2E 8Y3
Phone (403) 250-9606 Fax (403) 291-9408

Mailing Address
Box 503, 3545 - 32 Avenue N.E.
Calgary, Alberta T1Y 6M6

- WCSS has tested Aqua Dams with some success.
- Inverted weirs have been utilized successfully at numerous spills and demonstrated at training exercises.
- Filter fences made with straw/hay and/or sorbent material has been utilized successfully at spills in shallow water.



Aqua Dam



Filter Fence

- Excavation equipment has been used to dam or divert oily water to a recovery area.
- The WCSS air bubble diverter has been used in a number of applications including in shallow water with some success.



Inverted Weir



Air bubble

CONCEPTUAL IMPROVEMENTS

- Conduct a literature review and discuss in the 2010 best practices workshop.
- Test the new “Watergate Dam”,
- Test a shallow water suction skimmer.
- Test the air bubble diverter.
- Utilize the shallow draft boom, turner valley gates and build a filter fence at 2010 Oil Spill Cooperative training exercises (Area C and W).
- Add a shallow water oil spill containment and recovery section in the WCSS Oil Spill Contingency manual.



Watergate Dam – Area P 2010 Exercise



Watergate Dam – Area Q 2010 Exercise

DEVELOP A FIELD TESTING PROGRAM

- Utilize a summer student to conduct a literature review.
- In July or early August (prior to Cooperative exercises) field test the Watergate dam, shallow water skimmer and air bubble diverter.
- At the 2010 pilot training programs test the shallow water boom.
- At Area W and C exercises utilize the equipment outlined in this report.
- Include shallow water spill response in the best practices workshop.
- Add a shallow water spill response section in the WCSS Oil Spill Contingency manual.

EQUIPMENT AND FACILITIES

Equipment

- WCSS training unit
- Turner valley gates and skirt.
- Water gate dam
- Aqua dam
- Air bubble diverter and compressor
- Shallow water boom
- Shallow water skimmer
- Sorbent
- Straw, chicken wire/pins and hardware to build a filter fence
- Deployment strategy

Facilities

- Testing site with shallow water conditions in central Alberta.
- Cooperative exercise sites.

2010 RESULTS

- The Watergate dam was tested at several Cooperative exercises and used successfully at one spill; as a result WCSS purchased several Watergate dams.
- Shallow water boom – Additional shallow water boom was purchased for the Lethbridge and Fort Nelson initial spill response units.
- An improved design of Turner Valley Gates was identified and WCSS purchased a total of 5x6 meter gates for field trials in 2011.



Watergate Dam & Turner Valley Gate – Area W 2010 Exercise

2011 FOLLOWUP

- WCSS will incorporate shallow water spill response in its oil spill contingency manual.
- WCSS will continue to demonstrate shallow water spill response equipment at exercises where there is shallow water.