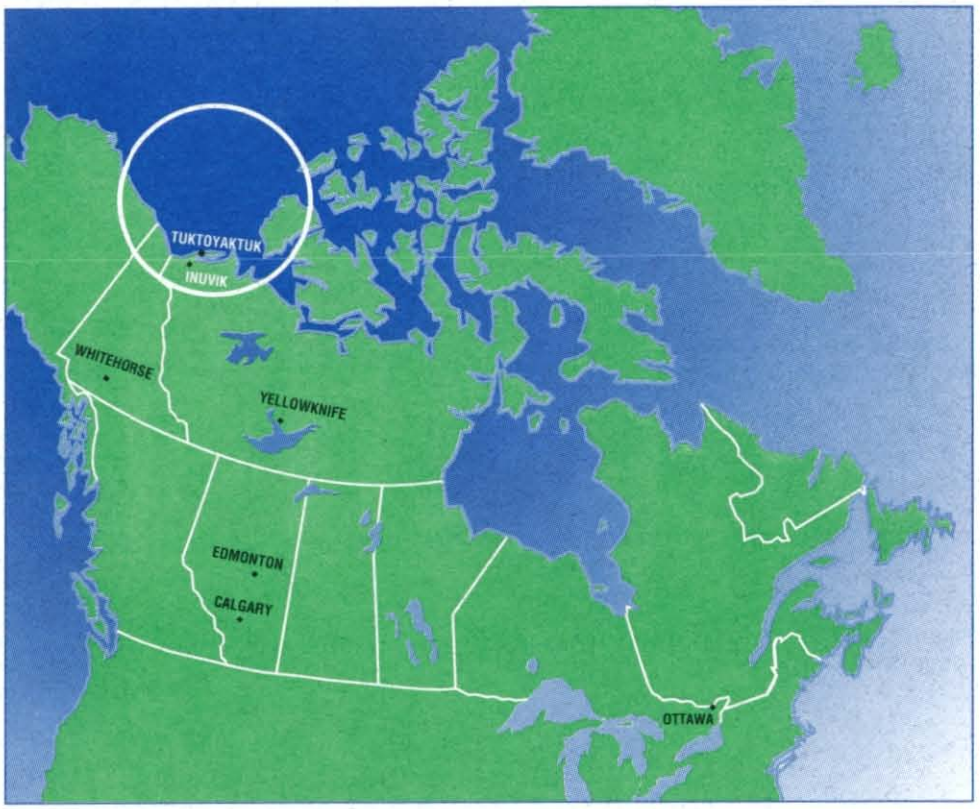
VOLUME 8

REPORT OF TASK GROUP SEVEN
Contingency Plan Testing and Inuvialuit Involvement



FOR THE
BEAUFORT SEA STEERING COMMITTEE
April 1991

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REPORT

by

TASK GROUP NUMBER SEVEN

CONTINGENCY PLAN TESTING AND INUVIALUIT INVOLVEMENT

for

BEAUFORT SEA STEERING COMMITTEE

APRIL, 1991

Northwest
Territories Energy, Mines and Petroleum Resources

Office of the Manager, Development Activities
Yellowknife

February 8, 1991

Mr. Robert Hornal
Hornal Consultants Limited
401 - 175 West Broadway
Vancouver, B.C.

Dear Mr. Hornal ;

Re : Final Report of Task Group # 7

The final report of the work of Task Group # 7 has been forwarded to James Maxim in both hard copy and disk formats.

As you are aware, Task Group # 7 was to deal with two different yet related issues : contingency plan testing and the maximizing of Inuvialuit participation in contingency planning.

Two final reports have been submitted. The first, having to do with the question of surprise exercises, is essentially the same in content as the interim report presented in Ottawa last December. I draw to your attention, however, one significant difference. In the interim report it was recommended that " A contingency plan testing methodology should be developed by regulatory authorities."

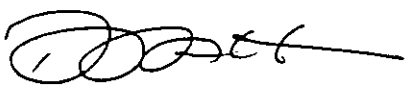
Subsequent discussions with Industry representatives have convinced me that the companies involved have an important role to play in this methodology development and the recommendation has been rewritten in the final report to reflect this change. The recommendation now reads :

" A joint industry-government task group should be convened to develop a contingency plan testing methodology."

The final report on the second subject, Inuvialuit involvement in contingency planning and operation, calls for an exercise to be conducted to assess appropriate roles for Inuvialuit tp play in this area.

I trust the reports meet the requirements of the Steering Committee.

Yours truly,



Doug Matthews

FEBRUARY 8, 1991

TASK GROUP # 7 FINAL REPORT TO THE BEAUFORT SEA STEERING COMMITTEE

PURPOSE

Task Group # 7 was established to assess Recommendation # 3 submitted by the Environmental Impact Review Board at the conclusion of its public review of Gulf Canada's Kulluk DPA submission. The Task Group was also charged with reviewing Recommendation # 2 of the Compensation Workshop held pursuant to the Review Board's hearings into the Esso, Chevron et al Isserk I-15 well application.

EIRB RECOMMENDATION

" A surprise exercise to test the effectiveness of contingency plans, and to demonstrate countermeasure and cleanup capabilities, must be conducted annually in the Beaufort Sea. The exercise must be conducted in realistic operating conditions. "

COMPENSATION WORKSHOP RECOMMENDATION

" Review the existing oil spill contingency plans in light of any new information and with the intent of maximizing Inuvialuit input. Focus on relationships betwen Industry, community and Inuvialuit response plans. "

Contents

" While in Inuvik, we also heard from the industry oil spill cooperative, which is one of the best equipped and trained in the country. Unfortunately, poor weather prevented us from visiting Tuk, where most of the oil spill clean-up equipment is located."

Brander - Smith, p.172

EXECUTIVE SUMMARY
TASK GROUP REPORT ON OIL SPILL CONTINGENCY PLAN TESTING

At the conclusion of the Environmental Impact Review Board hearings into the Gulf Canada Resources Kulluk DPA application, the Board recommended, among other things, that a surprise exercise to test the effectiveness of contingency plans be held annually in the Beaufort Sea. The Board further recommended that such exercises be held in realistic operating conditions.

A Task Group was struck by the Beaufort Sea Steering Committee to assess this recommendation. The Task Group began with a workshop in Inuvik in November of 1990 attended by experts in oilspill contingency plans. This was followed by a number of in-depth interviews in the weeks following.

As a result of these consultations, a distinction was drawn between the capacity of a contingency plan and its capability. The former was defined to refer to the presence of the required equipment while the latter refers to the ability of the equipment to do its prescribed job.

Any contingency plan testing should be able to answer two central questions about the components of the plan: are they there and do they work as promised in the plan?

The Task Group concluded that surprise tests were not always appropriate and that while some elements of a contingency plan could be surprise tested, others were more appropriately demonstrated through planned exercises.

The Task Group went on to describe a number of testing mechanisms which could be used to review a contingency plan short of actual plan operation. These included tests for compliance, coordination, and reality and obligatory tests. These various tests could be applied to the appropriate elements of a plan to ensure that they, like the equipment, actually worked.

In conclusion, the Task Group recommends that a joint industry-government group be struck to develop a contingency plan testing methodology for use in the Beaufort.

RECOMMENDATIONS ARISING FROM THE TASK GROUP REPORT ON OIL SPILL CONTINGENCY PLAN TESTING

1. A joint industry-government task group should be convened to develop a contingency plan testing methodology. This methodology should identify the various elements to be tested, the methods to be used, and the department/agency most appropriate to undertake the test.

2. Relationships among the agencies involved in plan approving and testing should be formalized in order to ensure that they are fully involved in any testing procedures.

3. COGLA should remain the lead agency with respect to contingency plan testing. However, the duality of its regulatory mandate should be examined in order to ensure that no conflict exists between its roles as a regulator and that of a promoter.

4. Where government agencies are identified as participants in a contingency plan, any exercises carried out should include representatives from the identified department or agency.

BACKGROUND: EXERCISE IS GOOD FOR YOU

Everyone agrees! Even a cursory review of the subject of oilspills and contingency plans quickly shows that nearly everyone thinks that plans should be tested. While our immediate concern here is with a recommendation of the Environmental Impact Review Board, it should be noted that the Board did not reach its conclusion as a lone voice crying out in the wilderness. It is in good company.

The EIRB called for a "surprise" exercise, held in "realistic operating conditions". The Canadian Petroleum Association wants "simulated exercises" based on realistic scenarios and "surprise" communications and mobilization exercises. "Paper" exercises are also encouraged by the industry association.

The West Coast Offshore Environmental Assessment Panel argued for tests to be carried out in "realistic conditions" and cautions against holding them only on weekdays and in good weather. The International Tanker Owners Pollution Federation Ltd. takes a "practical" approach to the subject and expands the recommended periodic tests to include checks that equipment is in place and in working order. Equipment should be "mobilised [sic] and deployed to test its actual availability and performance".

The Royal Commission on the Ocean Ranger Marine Disaster wants the crews of standby vessels to " be exercised in the use of the vessel's rescue equipment at least weekly, weather permitting" and recommends that joint exercises be held periodically among SAREC, RCC and industry.

Brander-Smith, surely by now to no one's surprise, supports the need for "regular, realistic exercises", and way back in 1984, when yet again Beaufort development appeared imminent, the Beaufort Environmental Assessment Review Panel (BEARP) recommended that " regular test exercises be held to verify emergency response procedures and capabilities..".

So, we begin with near universal agreement on the need to test contingency plans. The favoured method used to test varies with the particular bias of the proponent, and ranges from an exercise of Armageddon-like proportions to the hurried shuffling of paper.

The EIRB and Its RECOMMENDATION

The recommendation by the EIRB that surprise exercises be held in the Beaufort to test company contingency plans was not enthusiastically embraced by all who read it and were potentially impacted by it. This lack of universal acceptance led to the formation of a task group to assess the recommendation and comment on how, or indeed if, the recommendation could be implemented as presented.

As a starting point to answer this question, an evening information exchange was held in Inuvik in November, preceding and in conjunction with an oilspill countermeasures workshop. About twenty delegates, all knowledgeable in some aspect of oilspill incidents, met to review the recommendation and argue its merits.

The broad range of contingency planning was discussed and agreement was reached to concentrate on contingency plans developed in preparation for an oilspill in the Beaufort. While federal regulations require that any operator on frontier lands develop a number of contingency plans in response to various potential incidents, it was agreed that the EIRB, although not specifically mentioning oilspill contingency plans, very probably had them in mind when it wrote its recommendation.

This evening led to the identification of several contentious issues which needed to be addressed at greater length before any appropriate response could be made to the EIRB's recommendation.

The major issues concerned the definition of "surprise" and the use of "surprise exercises" to test plans ; what are "realistic conditions" in the Beaufort ; and the establishment of standards against which plans and equipment could be measured.

Over the next three weeks a number of in-depth interviews were held with interested parties to further explore the areas of contention. What follows is based on both the evening session and the interviews. While the reporting is done by a single person, the concerns discussed and the conclusions reached are generally held by the participants.

"IF I'M ALREADY DOING IT, DO I NEED TO BE TESTED?

Before dealing in detail with the issues identified above, it might be appropriate to put the subject of northern drilling and the need for contingency plan verification in perspective.

Contingency plans need to be tested to show that the equipment they call for is actually available and that it works. The definition of equipment can be broadened to include the officials identified in the plans as having some major or minor role in its success.

The experience of the Exxon Valdez and the response thereto showed that contingency plans, while looking good on paper, do not always perform as they should in real events. Exercises, whether simulated or realistic, are intended to show that what was promised can in fact be delivered.

But the need for testing is often argued against based on the "experience" of the operators and the consequent proof of capability this experience provides. "We've been at this a long time," goes the argument, "and we know what we're doing."

This argument, like most swords, cuts both ways. Long-term exposure to an activity while it may develop expertise may also engender complacency as was the case with the Alyeska operation at Valdez. Closer to home, the Energy Resources Conservation Board recently reported a troubling increase in both blows and blow-outs in Alberta drilling. The increase in blow-outs maintains an upward trend which had previously peaked at five incidents in 1988.

While there is a tyranny associated with the comfort of large numbers, there is perhaps a much greater potential for abuse in small numbers acting as if they were big ones.

In the North, Industry often speaks with pride of its "30 year record of operations" and of experience gained over "12 years of drilling in the Beaufort". On the surface, impressive sounding numbers. How legitimate are these claims to experience ?

In the Delta, active drilling began in 1962 with the Nicholson G-56 and N-45 wells. There was no further activity until 1965 when one well was drilled, followed by another three year hiatus. In 1968, spurred on by the giant Prudhoe Bay discovery, Delta drilling increased rapidly with some 95 wells drilled in the next six years. The following sixteen years saw another 71 wells drilled for a total, over nearly 30 years, of about 164 wells.

While this drilling was carried out under often inclement weather conditions and required some careful logistical planning, the drilling technology itself did not differ markedly from that used in southern operations. And the numbers were small ; by comparison, in 1989 some 4,142 wells were drilled in Alberta.

The offshore first saw drilling in 1973 with the Adgo well drilled from an artificial island in some 3m of water. The period from 1973 to 1989 saw some 84 wells drilled in the southern Beaufort Sea. Again, credit must be given for the logistical undertaking this represents and for the unique technology developed by Industry to operate in this environment. But, when all is said and done, many of the "offshore" wells were in fact drilled with pretty conventional equipment located on firm foundations such as islands, whether sand or ice, or on bottom-founded rigs. In these cases, the BOP is at surface and there is, of course, no marine riser system to complicate the drilling.

Taking water depth of 20 m as a guide and an indicator of "northern" wells, only 42 such wells have been drilled in the Beaufort over the past 16 years. Whether this is enough to constitute solid expertise is an open question.

Industry deserves credit for tough work done well in the North. But, let's treat the numbers with some caution. We have all heard of the statistician who drowned while crossing a river whose average depth was two feet.

And now to the issues of significance.

SURPRISE, IT'S A TEST !!

The EIRB in its recommendation called for a "surprise exercise" to test company abilities. This surprise aspect created a good deal of discussion both in Inuvik and in subsequent interviews. While many could appreciate the Board's intent, the practicalities and indeed the necessity of a "surprise" element was not generally accepted by all. In fact, they weren't accepted by any, for reasons which will be dealt with here.

Why a surprise test, and what does "surprise" mean ? As an accepted definition, surprise means without the previous knowledge of the event. Thus, general agreement was reached that there are times when it may well be self-defeating to allow the testees to prepare for a test as this could result in test results which are not realistic. But not all elements of a contingency plan are appropriately addressed by a surprise test and may need to be addressed in another fashion.

"Surprise" was also taken to indicate that speed of response was critical to the contingency operation. This question of speed occasioned much discussion both during the November workshop and in follow-up interviews. Is speed of response critical ?

It was argued by COGLA in its observations on the EIRB recommendation that speed was not a central element of an oil spill response plan in the event of an oil well blowout. The agency made the case that an oil well blowout is not the same as the sudden batch-release of a pollutant from a ship incident where an immediate response would help to minimize the environmental impact. COGLA maintains that well control is a necessary first step in any contingency plan and that oil spill countermeasures would not be undertaken until such time as it could be ascertained that they would not interfere with surface well control operations and that they could be conducted safely.

COGLA therefore concludes that some 48 hours are available to the oilspill response teams to organize marine cleanup response.

In support of this argument it has been posited that effectiveness, not speed, is the central issue with oilspill response. It may be appropriate to await further information so as to ensure the most effective placement of the equipment, rather than to concentrate on the speed with which it can be placed. Speed is also a relative term ; the equipment may be mobilized in very short order, but the steaming time of an oilspill response barge is relatively fixed and cannot be much improved upon.

In rebuttal it should be pointed out that the distinction which has been made between the potential damage occasioned by a tanker incident and that of a blow-out is no longer totally appropriate. While a tanker could well spill tens of thousands of barrels in a batch release of short duration, it has been argued that a well flowing at 3000 barrels a day allows some greater leeway of response time.

The estimates of flows of much higher rates described at the Kulluk hearings alters this perception markedly. At a flow of 40,000 barrels a day, a blow-out could soon equal any volume disgorged from a disabled tanker.

Further, if shoreline protection is a critical element of the contingency plan, it matters little if the spill is from a ship or a well : the oil would very probably reach the shoreline at about the same time. Response time for shoreline protection, then, is not altered by the nature of the source.

Taking the best elements of both schools of thought we can arrive at a conclusion that while oilspill countermeasures at the blow-out site must wait on well control efforts, countermeasures at other areas of the affected sea and shoreline zone need not do so. In fact, they should not. But speed, as popularly defined, is still not the critical element - effective deployment of the equipment is.

But how to test the plan to verify both the quick mobilization of the equipment and its effective deployment ?

As a starting point a distinction can be drawn between the capacity of a system and its capability. The capacity of a system may be defined as its equipment and manpower complement while its capability refers to its ability to do the job assigned to it. The former can be surprise tested while the latter might better be demonstrated in field conditions.

Thus, it is entirely reasonable to have the inspecting authority require, with no forewarning, that the staff identified as the operating crew of the pollution barge be summoned to the barge at short notice in order to test the mobilization process. This verifies the plan's reaction times and answers the first central question - is the equipment there and ready ?

The capability of the system can be demonstrated during exercises which are not based on surprise. There is in fact no easily discernible reason for testing major oilspill system capability under surprise conditions. If speed of response is not a central element, what does a surprise exercise demonstrate ? If the system were designed to respond to emergency events, for example small spills in a harbour area which need to be caught before entering water intakes, then surprise tests may be appropriate to keep the staff "sharp". However, such immediate response agencies usually have a sufficient volume of real calls that surprise exercises are not needed.

On the other hand, containment of major spills is an infrequent event requiring the use of equipment and techniques which are not commonly used. Skill in using the equipment and familiarity with the techniques is more important than the speed with which the staff members act.

It should also be noted that "surprise" exercises typically remain a surprise only until such time as the staff realize that the event is a staged one. The focus then shifts to ensuring that one acts in the expected manner so as not to attract any undue criticism at the debriefing following the exercise.

We have then one generally accepted conclusion at this point - capacity can and should be surprise tested, capability is better demonstrated through exercises which are planned. Now we turn to demonstration exercises and attempt to show that they may be less than useful in any event.

NOT IN MY OCEAN, YOU DON'T

The EIRB recommended that the exercises demonstrate cleanup capabilities and that they be conducted in realistic operating conditions. There are two central problems with this : cleanup capabilities cannot be demonstrated without something to clean up and realistic operating conditions, which is taken to mean weather and sea conditions, may often be beyond the effective range of the equipment.

First, to oil on water. For years, Industry has approached community councils and hunters' groups in the Beaufort area asking for their support for the companies' application to dump oil in the ocean or in Tuk Harbour for the purpose of demonstrating clean-up techniques. And for an equal number of years, both the councils and the HTCs and their predecessor HTAs have said "no".

As recently as last March, the Tuk HTC declined to support Gulf Canada's application to spill 1640 litres of crude on the ice for a demonstration exercise. By comparison, past exercises in other jurisdictions have used anywhere from 70 to 700 tonnes of oil for the purpose of testing.

Beaufort residents are not alone in their reluctance to allow test spills. Other jurisdictions have exhibited a similar reluctance, among them the City of Calgary which continues to oppose even the use of dyed canola oils for upstream river tests.

And so, a problem. How to demonstrate cleanup capabilities without oil ? Surprise or no surprise. Five possible resolutions have been suggested.

1. Go ahead and spill the oil without local support.

   The AWPPA does allow the spillage of oil for the purpose of testing oilspill cleanup capabilities and Industry would probably be within its rights to pursue an application.

Industry generally feels that this would be a counter-productive approach to a sensitive issue. It should also be noted that any application to spill oil would require about a year to move through the system. One could not hope to plan a surprise exercise here.

2. Use an alternate form of oil, for example mineral oil.

   There is still the need for a permit here and there would still be the potential for an unacceptable impact on birds which can be fouled by any form of oil.

3. Use a substitute for oil, for example oranges.

   This type of substitute was in fact used by the Alyeska system in a test. At the end of the day, the equipment demonstrated an ability to pick up oranges. This may be good news in Florida but doesn't mean much in the Beaufort.

4. Establish a designated site for oilspill testing.

   This has been done in England where an area of the Thames has been set aside for the purpose of testing and demonstrating equipment and techniques. Such an idea may have merit in the Beaufort and should be followed up with community groups. Note however that once a ship has been given the coordinates of the designated site in an exercise that the surprise element would be difficult to maintain.

5. Accept third party accreditation as evidence of capability

   Much of the specialized oilspill containment equipment currently being purchased for use in the Beaufort is Norwegian in origin. One of the reasons for the popularity of that country's equipment is the testing the products endure before being marketed. Norway allows the spilling of oil on water for the purposes of testing with the result that equipment from that country comes with some realistic assessment of its capabilities.

It may therefore be appropriate that such equipment be accepted into the Beaufort after being accredited as to capability by an acceptable agency such as the American Bureau of Shipping (ABS), Det norske Veritas or that perennial favourite, the Canadian Coast Guard.

A word about dispersants. They are an important element of most companies' countermeasures and they will be dealt with in greater detail in later pages. For now one need merely note that the capability of dispersants cannot be clearly demonstrated without oil to disperse.

Aside from the question of the lack of oil on which to demonstrate capability, there is the question of carrying out exercises in realistic operating conditions and how this might be addressed. Many local residents have been present when exercises have been cancelled due to bad weather or high seas. No matter the explanation offered by the demonstrator, the observers take away the conclusion that the equipment simply does not work. There is little comfort in this view.

What then are "realistic conditions" ? One can define them as the median weather conditions, that is the temperature, sea state, winds, and so on within which the equipment is supposed to demonstrate its effectiveness.

Would it not be better to define realistic conditions as the conditions within which the equipment can reasonably be expected to perform? Don't start with the sea, start with the equipment. While this may be a humbling experience, it may lead in the end to a realistic appraisal of capabilities, the proper assessment of risk, and eventually the development of newer, more capable equipment to meet harsher environments.

"No boom can contain oil against water velocities much above 1 knot acting at right angles to it. The way in which oil escapes and its relation with water velocity is as much a function of oil type as boom design. Low viscosity oils escape at lower velocities than more viscous materials. "

The International Tanker Owners Pollution Federation Ltd

Thus, realistic conditions for boom are in the range of water velocities of less than one knot. That's all the boom can do. Testing it in realistic Beaufort currents of 1.47 knots (maximum surface currents as stated by Amoco) can only result in disappointment and prove nothing.

The same method of clarifying the usefulness of the Oilspill Response Barge might indicate that realistic conditions for this piece of equipment is a wave height of 3 m. Given that the barge has not been out of Tuk Harbour in the past four years, there is some question as to its real capabilities. Were there a blow-out in the Harbour, we're fine. Beyond that area, there is a lack of comfort.

To conclude this section, then, how can the two questions posited earlier best be answered ? Is the equipment there ? (capacity) Does it work ? (capability) A surprise mobilization test can be used to answer the capacity question while capability is better demonstrated through exercises which need not contain a surprise element.

BEYOND EQUIPMENT

There are a number of elements in a countermeasures plan which are not strictly related to the operation of equipment. These include, among other things, the ability to obtain needed supplies, coordination with other agencies, and disposal plans. The delegates to the workshop were in general supportive of the need to test all the elements of a plan, not just those specific to actual cleanup operations, and there was some discussion of the means appropriate to each. Other than actual equipment tests, putting the oars in the water so to speak, there are a number of other tools available to the inspecting authority. Following are examples of tests which could be used to test various elements of a plan.

1. Reality Test

This is a test of a contingency plan which seeks to analyse the "reality" of the proposal. Does the plan conform to reality or is it dependent on a number of untested assumptions ? Is it based on hoped-for occurrences or is it, as Brander-Smith has noted, "based on the mistaken belief that if things go badly the response will escalate and additional resources will simply be called in"?

As a case in point, Gulf's submission to the EIRB contains a plan to implement helitorch attacks on oil on ice which would surface in the Spring following an end of season blow-out. The company's plan envisages some 3000 sorties in a 4 to 6 week period from bases somewhere along the Arctic coast.

An analysis of this plan was carried out by Task Group 7 which showed that while the plan was overall "doable", the requirement might well be for 27 helicopters, not 18 as presented by Gulf. The analysis also pointed out that crewing would be a problem and that there is at present no fast and easy way to access pilot availability figures through Transport Canada. Further, if the ice containing the spill travels to American waters, there may well be a requirement that American crews and helicopters be used for the sorties. As an additional complication, an analysis done for Task Group 1 calculates that 4700, not 3000, sorties may be required. This represents a 50 % increase in the original projection and translates into securing 40 helicopters, not 18.

2. Coordination Tests

Most contingency plans call for the involvement of other companies, organizations, and government agencies. While the coordinating effort may look good in the plan, it very probably has never been exposed to practical testing.

The coordinated equipment and physical response to an event can be easily tested through joint exercises involving various agencies. The Canadian Coast Guard currently holds such exercises with Industry in the Beaufort area to test equipment. There is, however, some uncertainty as to whether these are required joint exercises or merely the result of convenience. But, of greater significance is the coordination of decision-making required in the event of a spill. How does one ensure that when decisions are required they will be made promptly and effectively?

Mention was made earlier of the use of dispersants as a countermeasure technique. Their use, it appears, is effective in some situations but not in others. There is still much debate about their toxicity and the areas where they should/should not be used. Reports from the Valdez incident relate the difficulty Exxon had in obtaining permission to use chemical dispersants and the consequent loss of opportunity this delay caused.

It is important to understand that dispersants have limitations, not the least of which is their inability to treat viscous oils and water-in-oil emulsions. In order to be effective, dispersants must be used before significant weathering has taken place and before the oil has become emulsified. Rapid decision making as to their use is therefore critical to the success of this particular countermeasure.

In order to ensure that decisions could be made quickly, the federal government and industry jointly developed the " Guide to Dispersant-Use Decision Making for Oil Spills in the Canadian Southern Beaufort Sea". This document sets out a system to be used in the event of an incident which will result in prompt, appropriate decisions about the advisability of using dispersant. As the CPA has pointed out, however, " the system has not been tested on a simulated basis, nor have environmental advisers and government decision-makers been trained on the system".

The conclusion to be drawn here is obvious.

3. Obligatory Tests

It has been pointed out that regulations currently in place require a variety of tests to be carried out by Beaufort operators and that these tests perform an important function in ensuring safe operations.

Given that the best method of dealing with an oilspill is to prevent it's occurring, tests of equipment such as the 15 day BOP test play an important role in any oilspill plan. While not wanting to downplay their significance and usefulness, our concern in this paper is with testing responses to an incident, not its prevention and thus preventative measures will only be acknowledged, not addressed.

It should be noted, however, that one should not expect any especial kudos for doing what is required by statute.

4. Compliance Tests

A contingency plan must deal with the disposal of the recovered oil and debris and describe in some detail what will be done with the products accumulated during the incident.

There are several options available here, ranging from burning, to burial, to temporary storage followed by eventual shipment out of the region. Most options will require permitting of some sort from a federal, territorial, or Inuvialuit agency. Storage sites, in particular, might best be identified well ahead of time and the necessary permits applied for as part of the overall company plan. Expecting that such permits can be obtained quickly in the event of a spill may prove to be no more than wishful thinking.

The contingency plan can and should be tested for this compliance and the assumptions upon which the plan is based can be highlighted.

TEST STANDARDS

The question was raised as to the standard to be used in testing contingency plan components. Should the plan be tested against itself or against some objective, outside standard?

The standard to be used would very much depend upon when the plan was being tested. If the plan is being reviewed prior to program approval, then it would seem best to check what the plan proposes against what the regulatory authority thinks is an appropriate and practical response. Once approval had been granted by the licensing agency, the plan has in effect been accepted as presented and should then be tested for compliance.

The question of standards raises the issue of who should be responsible for contingency plan testing. An obvious conclusion is that the agency with the most expertise in the area to be tested should have the responsibility. Expecting a single agency to have experience ranging from helicopter techniques to waste disposal practices is unrealistic.

Having said this, there is at the present time no formal inter-departmental or inter-agency system in place to ensure that all elements of a plan are tested either before or during a drilling program. At present, industry plans are sent out to various groups for comment, but the system is relatively unfocused and casual.

CONCLUSION AND RECOMMENDATIONS

The development by industry of an oilspill contingency plan is a requirement of drilling in the Beaufort Sea. The document(s) sets out in some detail what the company believes will happen in the event of an oilspill incident and thus represents the best guess of a number of people, expert and otherwise, as to the impact and control of a spill.

The document is more than a reluctantly submitted plan for an event that in all probability will never happen - it is a planning tool, an environmental protection document, and a necessary piece of information used by the public to arrive at a risk analysis of a particular undertaking.

A contingency plan provides different information to a number of audiences:

- to company staff, it provides a clear description of the action to be taken in the event of an incident;
- to senior management, it provides an indication of the potential company exposure, financial and legal, in the event of a spill ;
- to regulators, it provides some satisfaction that the legislatively mandated responsibilities which they administer have been or can be addressed; and
- for the public, the document gives some comfort that in the event of a spill, "someone will do something".

All these audiences make plans based on the belief that what has been spelled out will happen and that the plan will work if and when needed. To the extent that the plan cannot be trusted, decisions based upon it are useless, and in many cases, dangerous.

In order to ensure that the plan can do what it states, two tests can be applied - is the equipment there ? and does it work ? A number of test formats have been discussed above, some of more practical use than others. From the discussion, and bearing in mind the two tests, the following recommendations are made on the subject of contingency plan testing.

1. A joint industry-government task group should be convened to develop a contingency plan testing methodology. This methodology should identify the various elements to be tested, the methods to be used, and the department/agency most appropriate to undertake the test.

2. Relationships among the agencies involved in plan approving and testing should be formalized in order to ensure that they are fully involved in any testing procedures.

3. COGLA should remain the lead agency with respect to contingency plan testing. However, the duality of its regulatory mandate should be examined in order to ensure that no conflict exists between its roles as a regulator and that of a promoter.

4. Where government agencies are identified as participants in a contingency plan, any exercises carried out should include representatives from the identified department or agency.

The question which should drive the subject of contingency plan testing is best expressed in the report of the International Tanker Owners Pollution Federation Limited :

" Have all aspects of the plan been tested and nothing significant found lacking ?"

CONTINGENCY PLAN TESTING AND THE NEED FOR EXERCISES: COMMENTS FROM A VARIETY OF SOURCES

1. The International Tanker Owners Pollution Federation, Limited
" Response to Marine Oil Spills "

" Regular exercises will ensure that contingency arrangements function properly and that all those likely to be involved in a spill become fully familiar with their particular responsibilities. From time to time, equipment listed in inventories should be mobilised and deployed to test its actual availability and performance." p. V.10

" Practical exercises of the overall contingency plan should be conducted periodically, not only to test the organisational aspects but also to ensure that the equipment and other resources in the plan are actually available and in working order ." p. IV.21

" Thoroughly train personnel [in the use and deployment of booms] and maintain their standards by practical exercises. " p. II.21

2. Canadian Petroleum Association

" Implementation Plan - Task Force on Oil Spill Preparedness"

"Contingency plans should be tested on a regular basis in company-simulated exercises involving all response team members. The exercise should focus on realistic scenarios." p. 9

" Operators should implement "surprise" communications and mobilization exercises. These should involve regulatory agencies and other operators where appropriate. " p. 10

" Operators should participate in "paper" exercises with regulators to test linkages between company contingency plans ans government plans. " p.10

3. Public Review Panel on Tanker Safety (Brander-Smith)

" While contingency plans to do with just about every possible marine spill scenario exist in all regions, they are for the most part poorly designed, uncoordinated, and untested. " p.53

" Although some organizations do perform contingency testing exercises, in the course of public hearings we heard time and again of the need for regular, realistic exercises and the need to disseminate results. Contingency exercises should be made as realistic as possible by using the actual equipment and people who would be called upon to respond in the event of a spill. " p.67

4. Beaufort Environmental Assessment Review Panel - July/84

" The Panel recommends that the Proponents' oil-spill contingency plans be formally reviewed and subject to approval by the appropriate government agencies before production drilling is allowed, and that regular test exercises be held to verify emergency response procedures and capabilities of the Proponents. " p.37

5. West Coast Offshore Exploration Environmental Assessment Panel - April/86

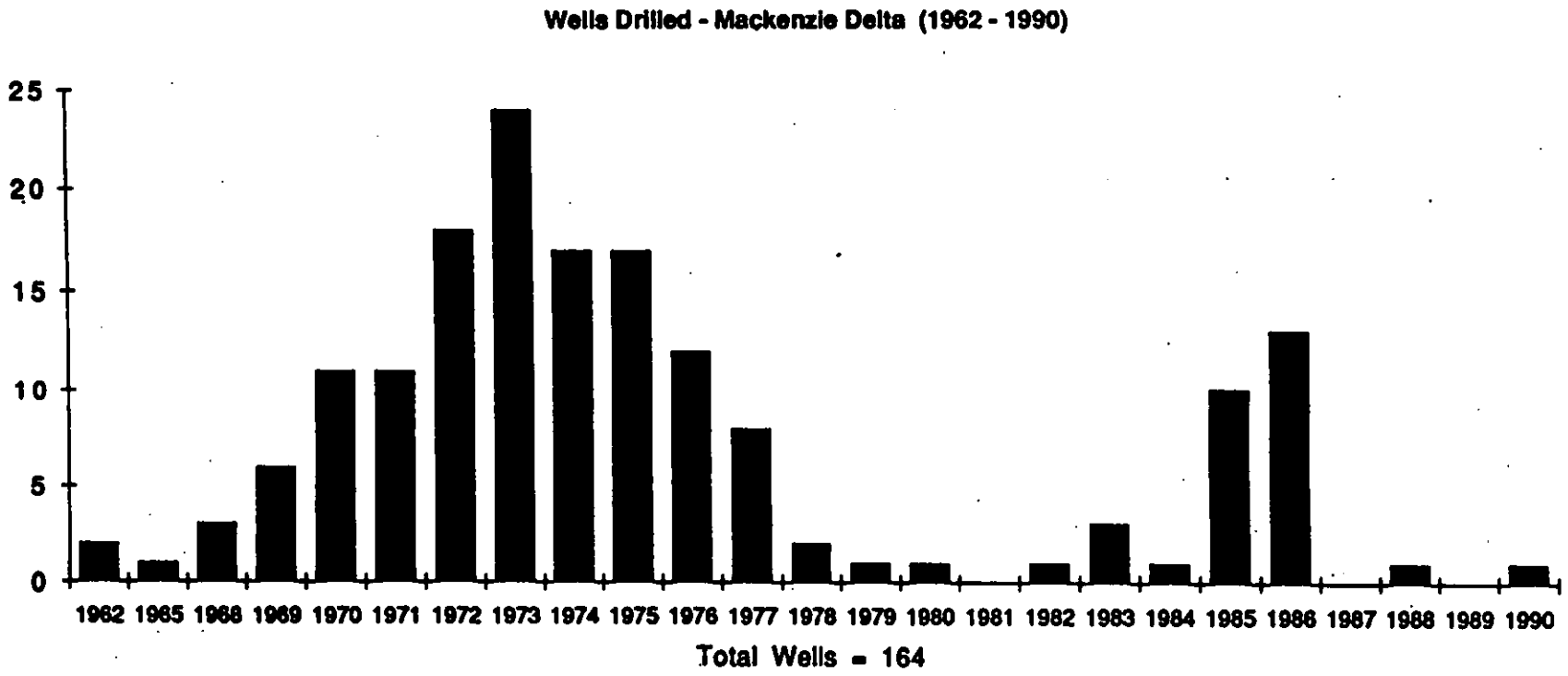
" The Panel recommends that, before exploratory drilling is approved, the regulatory authority ensure that arrangements are in place to regularly test and evaluate operator and government contingency plans." p.71

" The Panel recommends that the regulatory authority ensure that at least one full scale oil blowout response exercise is carried out during the initial exploration period, and if an extended exploration program takes place, that at least one exercise is carried out each year. " p 71

6. Royal Commission on the Ocean Ranger Marine Disaster

" That Canada develop a contingency plan outlining the procedures to be followed in the event of a major marine disaster and that joint exercises be periodically held to train the key personnel of SAREC, RCC, and industry both onshore and on the rigs and standby vessels in what they would be required to do in the event of rig evacuation onder emertgency conditions. " p.155

" That periodic exercises be held by industry for the purpose of training its key personnel in what would be required of them in the event of an emergency." p. 152


Wells Drilled - Mackenzie Delta (1962 - 1990)
25
20
15
10
5
0
1962 1965 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990
Total Wells = 164

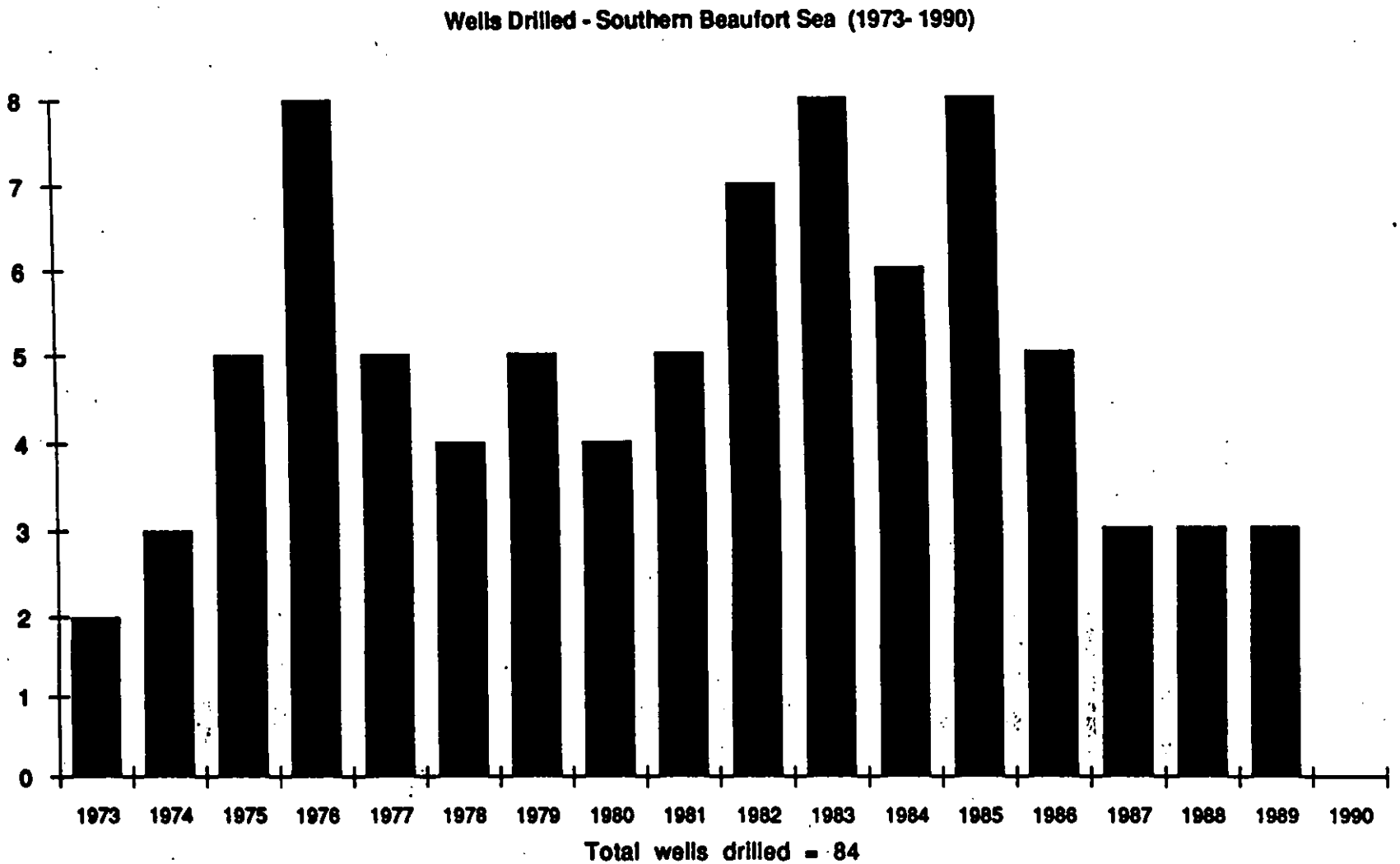
DRILLING DATA
MACKENZIE DELTA - ONSHORE

WELL NAME		YEAR	TOT DEPTH
Nicholson	G-56	1962	863.1
Nicholson	N-45	1962	863.5
Reindeer	D-37	1965	3861.2
Crossley Lk S	K-60	1968	1685.2
Tuk	F-18	1968	3146.1
Tununuk	K-10	1968	3757.0
Eskimo	J-07	1969	905.6
Inuvik	2D-54	1969	1563.4
Atkinson	H-25	1969	1810.8
Kugaluk	N-02	1969	2452.1
Horton River	G-02	1969	2479.6
Ellice	O-14	1969	2905.0
Nuvorak	O-09	1970	1158.3
Natagnak	K-23	1970	1517.0
Magak	A-32	1970	1573.8
Sholokpaoqak	P-60	1970	1920.2
Atkinson	M-33	1970	1928.5
Natagnak	H-50	1970	1952.6
Tuktu	O-19	1970	2315.6
Aklavik	A-37	1970	2584.4
Onigat	C-38	1970	2596.1
Beaverhouse Cree	H-13?	1970	3747.5
Blow River	E-47	1970	4269.9
Kanguk	T-24	1971	1602.3
Pikiolik	M-26	1971	1985.5
Spring River	N-38	1971	2136.3
Mallik	L-38	1971	2535.1
Kimik	D-29	1971	2659.6
Ikhil	A-01	1971	2954.4
Taglu	G-33	1971	2994.1
Pikiolik	E-54	1971	3118.1
Taglu West	P-03	1971	3310.1
Mayogiak	J-37	1971	3685.9
Atigi	G-04	1971	3733.8
Akku	F-14	1972	1523.7
Atertak	E-41	1972	1985.5
Niglintgak	H-30	1972	2382.6
Mallik	P-59	1972	2633.3
Roland Bay	L-41	1972	2752.3
YaYa	P-53	1972	3034.7
Ivik	C-52	1972	3048.0
Parsons	F-09	1972	3547.3
Umiak	J-37	1972	3633.2

Ivik	J-26	1972	3648.2
Taglu	D-55	1972	3705.8
Titalik	K-26	1972	3840.5
Nuktak	C-22	1972	3856.6
Mallik	A-06	1972	4136.7
Unipkat	I-22	1972	4361.4
Siku	C-55	1972	4506.5
Kilagmiotak	F-48	1972	4771.9
Taglu	C-42	1972	4895.1
Aklavik	F-17	1973	891.5
Amaguk	H-16	1973	1258.4
Kanguk	F-42	1973	1546.3
Upluk	C-21	1973	1637.1
Natagnak	K-53	1973	1751.7
Reindeer	F-36	1973	1830.0
Reindeer	A-41	1973	1830.0
Kiligvak	I-29	1973	1965.0
Aklavik	F-38	1973	2055.9
Atkinson	A-55	1973	2232.7
Toapolok	O-54	1973	3048.0
Ivik	N-17	1973	3049.0
Ivik	K-54	1973	3151.0
Parsons	N-10	1973	3205.0
Unak	B-11	1973	3345.2
Parsons	P-53	1973	3435.1
Kumak	J-06	1973	3480.8
Kumak	C-58	1973	3530.2
Wagnark	G-12	1973	3571.6
Nuna	A-32	1973	3578.4
Kugpik	O-13	1973	3688.4
Langley	E-29	1973	3809.7
Taglu	D-43	1973	4554.9
Ikhil	I-37	1973	4703.7
Napoiak	F-31	1974	465.9
Smoking Hills	A-23	1974	596.5
Russell	G-23	1974	1833.0
Kikorralok	N-46	1974	1878.1
Atigi	O-48	1974	1982.5
Wolverine	H-34	1974	2041.6
Amarok	N-44	1974	2333.8
Toapolok	H-24	1974	2622.8
YaYa	I-17	1974	2684.0
YaYa	M-33	1974	2788.9
Kamik	D-58	1974	3190.6
Imnak	J-29	1974	3404.6
Kipnik	O-20	1974	3556.1
Parsons	O-27	1974	3570.4
YaYa	A-28	1974	3944.0

Niglintgak	M-19	1974	4025.2
Mayogiak	L-39	1974	4447.0
Kapik	J-39	1975	1467.7
Ogeoquoq	J-06	1975	1840.3
Louth	K-45	1975	2218.5
Kugpik	L-24	1975	2819.0
Niglintgak	B-19	1975	3144.0
Kilagmiotak	M-16	1975	3154.7
Kamik	L-60	1975	3207.1
Kamik	D-48	1975	3235.1
Siku	C-11	1975	3294.9
Parsons	L-43	1975	3305.4
Garry	P-04	1975	3352.8
Titalik	O-15	1975	3383.0
Ellice	J-23	1975	3505.2
Parsons	A-44	1975	3535.7
Kumak	K-16	1975	3709.4
Upluk	M-38	1975	3764.3
Red Fox	P-21	1975	4178.8
Taglu	H-54	1976	2795.6
Tullugak	K-31	1976	2926.1
Kurk	M-39	1976	3109.0
Parsons	N-17	1976	3208.3
Siku	A-12	1976	3287.9
Parsons	P-41	1976	3555.5
Kamik	P-38	1976	3566.2
Tununuk	F-30	1976	3642.4
Ulu	A-35	1976	3919.7
Parsons	L-37	1976	3961.2
Parsons	D-20	1976	4130.0
Wagnark	C-23	1976	4251.7
Kumak	E-58	1977	1555.5
Sadene	D-02	1977	1857.8
Upluk	A-42	1977	2794.4
Mallik	J-37	1977	3096.8
Siku	E-21	1977	3427.5
Fish River	B-60	1977	3502.2
Ogruknang	M-31	1977	4429.4
Umiak	N-10	1977	4814.3
Garry	G-07	1978	4021.0
Kaglulik	M-64	1978	
Napartok	M-01	1979	1960.0
Mayogiak	M-16	1980	3093.0
Natagnak	O-59	1982	2120.0
Pikiolik	G-21	1983	1429.0
Tuk	M-09	1983	3030.0
Nuna	A-10	1983	3250.0
Tarsuit	P-45	1984	

Itkrilek	B-52	1985	1284.0
Tuk	H-3-	1985	1399.0
Onigat	D-52	1985	1409.0
Tuktuk	A-12	1985	1790.0
Tuk	G-39	1985	1797.0
Tuk	B-40	1985	1800.0
Shakgatiatachig	D-50	1985	2061.0
Tuk	J-29	1985	3176.0
Upluk	L-42	1985	3350.0
Taglu West	H-06	1985	4200.0
Parsons	F-02	1986	1270.0
Onigat	K-49	1986	1423.0
Ikhil	K-35	1986	1540.0
Nuna	E-40	1986	1625.0
Tuk	G-48	1986	1700.0
Mayogiak	N-34	1986	1722.0
Tuktuk	H-22	1986	1802.0
Tuktuk	D-11	1986	1810.0
Mayogiak	G-12	1986	2429.0
Wagnark	L-36	1986	2609.0
Atertak	K-31	1986	3034.0
Unak	L-28	1986	3259.0
Hansen	G-07	1986	3276.0
Nipterk	?	1988	
Unipkat	N-12	1990	1614.0


Wells Drilled - Southern Beaufort Sea (1973- 1990)
8
7
6
5
4
3
2
1
0
1973
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
Total wells drilled = 84

BEAUFORT SEA DRILLING DATA

NAME		YEAR	TOTAL DEPTH	WATER DEPTH
Adgo	F-28	1973	3208.9	3.0
Immerk	B-48	1973	2707.5	10.0
Unark	L-24	1974	3813.0	4.0
Pullen	E-17	1974	3885.0	5.0
Pelly	B-35	1974	3328.1	7.0
Netserk	B-44	1975	3528.4	7.0
Ikattok	J-17	1975	3810.0	7.0
Netserk	P-40	1975	4370.2	8.0
Adgo	P-25	1975	2538.0	3 +/-
Adgo	C-15	1975	3193.0	3 +/-
Unark	L-24A	1976	3935.0	4.0
Kugmallit	M-59	1976	2193.0	6.0
Sarpik	B-35	1976	3290.6	8.0
Arnak	L-30	1976	4523.2	10.0
Tingmiark	K-91	1976	3051.0	31.0
Kopanoar	M-13	1976	4320.2	56.0
Kopanoar	D-14	1976	1146.8	57.0
Nektoralik	K-59	1976	2791.9	77.0
Kannerk	G-42	1977	2482.3	6.0
Isserk	E-27	1977	4120.6	18.0
Ukalerk	C-50	1977	2306.1	24.0
Kaglulik	A-75	1977	644.7	32.0
Nerlerk	M-98	1977	4949.0	50.0
Tarsiut	A-25	1978	4434.0	23.0
Ukalerk	2C-50	1978	4953.0	24.0
Natsek	E-56	1978	3520.0	39.0
Kaglulik	M-64	1978		off
Koakoak	O-22	1979	4365.0	49.2
Kopanoar	L-34	1979	2015.0	58.2
Kenalooak	J-94	1979	4568.0	67.7
Adgo	J-27	1979	3108.0	3 +/-
Kopanoar	2L-34	1979		55 +/-
Issungnak	O-61	1980	3582.0	19.0
Kilannak	A-77	1980	2996.0	25.3
Kopanoar	2I-44	1980	4010.0	57.9
Kopanoar	I-44	1980		55 +/-
Alerk	P-23	1981	3223.0	11.6
Issungnak	2O-61	1981	4460.0	19.0
E. Tarsuit	N-44	1981	4531.0	22.0
N. Issungnak	L-86	1981	4771.0	27.0
Irkaluk	B-35	1981	4860.0	56.4
W. Atkinson	L-17	1982	2480.0	6.0

Kiggavik	A-43	1982	3511.0	18.0
Itiyok	I-27	1982	3955.0	19.0
E. Tarsuit	N-44A	1982	2353.0	22.0
Uviluk	P-66	1982	4756.0	29.7
Orvilruk	O-03	1982	3912.0	59.9
Aiverk	2I-45	1982	5034.0	60.6
Pitsiulak	A-05	1983	2192.0	27.0
Kogyuk	N-67	1983	4798.0	28.0
Kadluk	O-07	1983	3896.0	29.0
Amauligak	J-44	1983	4002.0	30.5
Havik	B-41	1983	4750.0	35.0
Natiak	O-44	1983	4650.0	44.0
Arluk	E-90	1983	4265.0	58.0
Siulik	I-05	1983	4824.0	64.0
Adgo	H-29	1984	3314.0	3.0
Amerk	O-09	1984	5000.0	25.6
Nipterk	L-19	1984	3873.0	26.0
Akpak	P-35	1984	2169.0	41.0
Nerlerk	J-67	1984	4446.0	65.0
Tarsuit	P-45	1984		25 +/-
Adgo	G-24	1985	3087.0	2.0
Nipterk	L-19A	1985	3520.0	11.0
Minuk	I-53	1985	3367.0	29.4
Akpak	2P-35	1985	3673.0	31.0
Edlok	N-56	1985	2530.0	31.5
Amauligak	I-65	1985	3648.0	32.0
Aagnerk	E-56	1985	1100.0	33.0
Adlartok	P-09	1985	2647.0	67.5
N. Ellice	L-39	1986	2047.0	6.0
Arnak	K-06	1986	4645.0	7.6
Kaubvik	I-43	1986	3323.0	17.0
Amauligak	I-65B	1986	3916.0	32.0
Amauligak	I-65A	1986	4521.0	32.0
Angasak	L-03	1987	2334.0	5.6
Amauligak	2F-24	1987	2898.0	32.0
Amauligak	F-24	1987		32 +/-
Amauligak	2F-24A	1988	2366.0	32.0
Amauligak	2F-24B	1988		32 +/-
Nipterk	?	1988		11 +/-
Isserk	I-15	1989	2693.0	7.0
Immiugak	A-06	1989	3535.0	35.0
Kingark	J-54	1989	2247.0	57.0

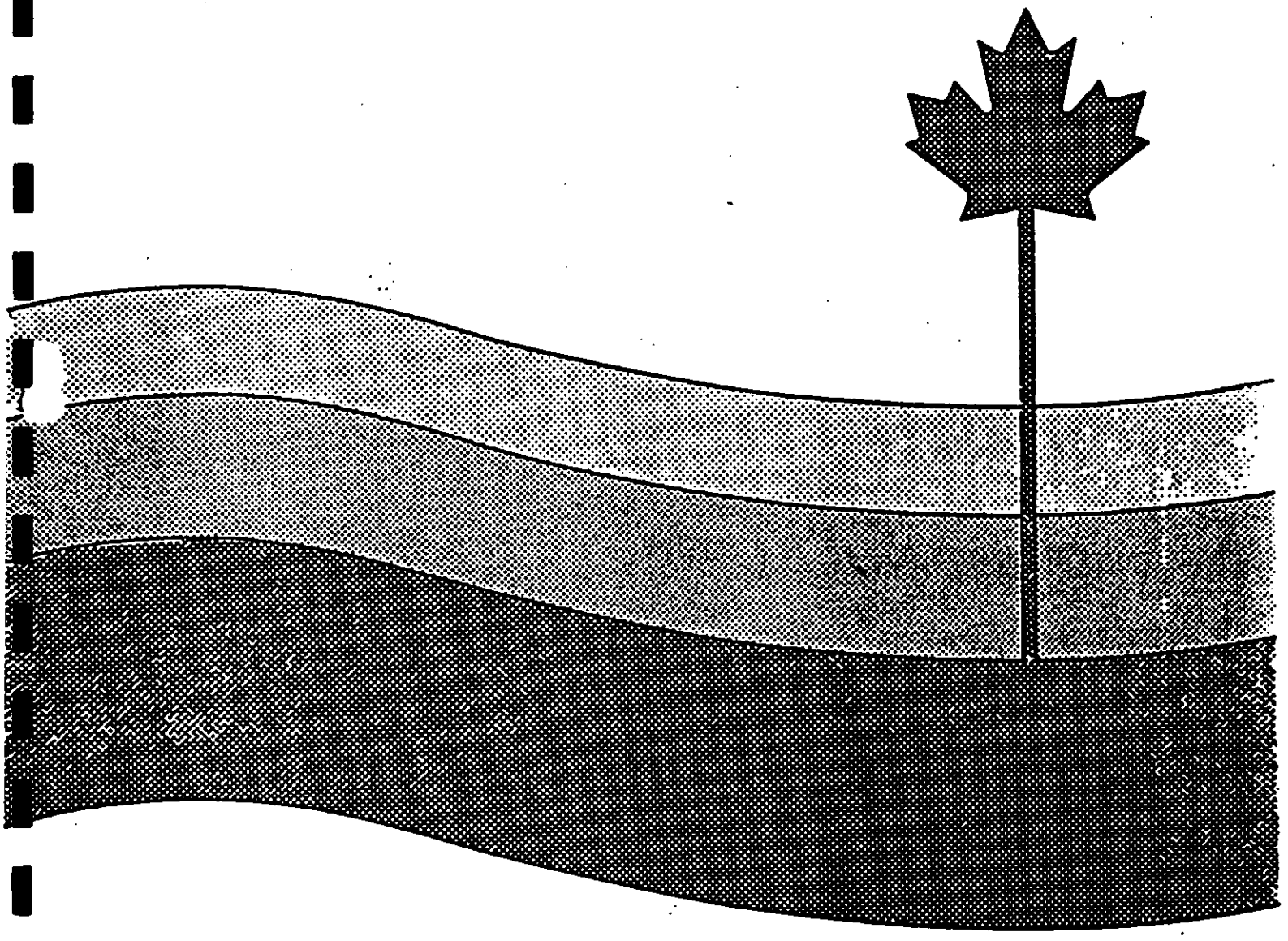
Canada Oil and Gas Lands Administration

Administration du pétrole et du gaz des terres du Canada

YUL 6014

Observations on the Environmental Impact Review Board's June 29, 1990, Decision Report on Gulf Canada Resources Limited's Proposed Kulluk Drilling Program

August 1990



Energy, Mines and Resources Canada

Énergie, Mines et Ressources Canada

Indian and Northern Affairs Canada

Affaires indiennes et du Nord Canada

Canada

Background

During the week of March 3, 1990, the Environmental Impact Screening Committee (EISC), constituted under the Inuvialuit Final Agreement, considered a proposed development by Gulf Canada Resources Limited ("Gulf") involving the use of the Kulluk conical drilling platform for exploration drilling in the Beaufort Sea during the period 1990-1992. The EISC referred the proposal to the Environmental Impact Review Board (EIRB) for further environmental impact review and assessment because of concerns about the thoroughness of contingency planning and countermeasures in the event of an oil spill. The proponent was subsequently counselled to prepare a detailed submission, addressing some 85 different issues for the EIRB by April 4, 1990, in order to allow 60 days for analytical review prior to the commencement of EIRB public hearings in Inuvik on June 4, 1990.

In its June 29, 1990, Decision Report, the EIRB recommended that the proposed drilling program not be approved. This recommendation was founded on two basic points; (i) the EIRB's belief that Gulf and the government were not prepared to deal effectively with a major oil well blowout in the Beaufort Sea during the open water season, and (ii) the lack of information that would enable the EIRB to assess the aggregate financial liability that would accrue in the event of a worst case oil well blowout.

In amplification of these two basic points, the Decision Report contains nine other recommendations for addressing issues that represent impediments to future drilling and fifteen concerns that underlie those recommendations. This paper provides COGLA's observations on each of these recommendations and underlying concerns.

Recommendation 3:

A surprise exercise to test the effectiveness of contingency plans, and to demonstrate countermeasure and cleanup capabilities, must be conducted annually in the Beaufort Sea. The exercise must be conducted in realistic operating conditions.

Observation:

The federal government recognizes the importance of being able to respond to a pollution incident without delay. This is the underlying reason for requiring petroleum operators to maintain equipment and dedicated staff in support of their offshore drilling programs.

Petroleum operators are obliged to conduct an annual oil spill cleanup exercise during the drilling program in compliance with Drilling Regulation 151 (d).

The recommendation to invoke surprise exercises under realistic conditions is predicated on the assumption that an immediate response will minimize the extent of the resulting environmental damage.

This premise is certainly true for the sudden batch-release of a pollutant such as the rupture of a tank at a shore facility or the grounding of a tanker.

In the case of an oil well blowout, however, the primary concern (following personnel safety and drilling unit integrity) would be to regain well control, i.e., to eliminate or control the source of pollution. Pollution cleanup operations would be permitted once it is established that they:

(i) would not interfere with surface kill operations at the well site; and

(ii) they may be conducted safely.

Under these circumstances the oil company's pollution control specialists normally have a margin of some 48 hours in which to organize the marine cleanup response to a blowout (more than enough time, given the required state of readiness.) Accordingly, COGLA emphasis is on the availability of dedicated hardware, organization, expertise, and support infrastructure rather than "fire hall" response times.

Offshore oil spill equipment deployment exercises are not without some degree of risk to marine personnel required to handle equipment at the waters' surface and to perform other upper deck activities. This risk increases to unacceptable levels when compounded by the stress of having to mobilize without due preparation in order to meet an arbitrary "realistic" standard. Instead, the oil company's response capability is assured by compliance with Drilling Regulation 151(d), an exercise tailored to the type of spill that a particular drilling program may encounter (on ice vs. open water), that is monitored in conjunction with inspections of the oil spill cooperative. This requirement is complemented by a communications exercise that tests the responsiveness of government agencies and various petroleum industry components to a simulated crisis. The results of the communications exercise, cooperative inspection, and 151(d) countermeasures exercise are then discussed among COGLA and the Beaufort Sea operators.

1.0 The Correlation between the Development of a Blowout and the Staging of the Response

1.1 Introduction

The argument has been put forward that a blowout does not happen instantaneously and, this being the case, there is no need to have the oilspill equipment and personnel ready to undertake a "fire engine response". The response could, if this were the case, be staged by various alert levels which would be driven by the alert status on the rig.

Operator's in the Canadian Beaufort Sea have developed comprehensive alert systems which produce alerts for the rig and the impact of the environment on the stationkeeping of the rig. A simple modification to this alert system could provide early warning for an impending problem thus allowing the oilspill response crew to attain a high state of readiness prior to the actual event.

Before going into this subject in too much detail it is worth re-visiting why this question has arose and why the timing of an oilspill response for a blowout has more recently been considered critical in terms of hours.

The argument has always been that a blowout is unlike a tanker spill and in no way can be considered as damaging. This is largely based on the fact that a blowout generally spills small volumes on a daily basis as opposed to a very large volume in a matter of hours. Historically the projected blowout volumes based on actual well data have been relatively small, in the order of 10,000 barrels per day. This being the case it would take some 25 days to achieve a Valdez type spill . During that time the oilspill equipment would be on scene and, at the very least, abating some of the flow.

All of this changed with the discovery of the Amauligak field , without doubt the largest and most productive field discovered to date in the Canadian Beaufort Sea. With the submission of Gulf's DPA for the Kulluk and their claim of a worst case of 40,000 barrels per day, the whole situation changed dramatically. We were now in a situation where a Valdez could happen every 6 days and a significant volume could be spilled in the first 48 hours.

Taking the previous points into consideration there are three main areas which impact on the need to respond quickly to an oilspill from a blowout, they are as follows:

(a) *Status of well / staged response*

(b) *The correct worst case projection*

(c) *Conclusions*

Each of these areas will be discussed in some detail on the following pages.

1.2 Status of Well / Staged Response

The basic concept here, as stated previously, is that there is no need for a "fire engine" response since blowouts do not happen instantaneously but rather develop over a period of time, commencing with a kick.

In the most part this is an accurate comment however human or environmental intervention by way of a human error or rig push off could move the event from a kick to a full scale blowout rather quickly.

The real issue here is what should the state of readiness of the oilspill crews be throughout the operating season. Quite clearly there are periods during the drilling of any well where the well offers little or no environmental hazard. Those are during the tophole or non-risk period and during the drill stem testing when the well is safely

cased. It therefore follows that during these periods there is little or no point in having the oilspill equipment in a high state of preparedness for a major spill.

However when the well is within the risk drilling zone ie the zone within which it is possible to encounter hydrocarbon bearing formation, then the risk of a blowout can occur at any time. The risk drilling zone can exist from as shallow as around 1500m hence it is conceivable that the well could be within the risk zone for several weeks.

The concept of classifying the risk zone into two areas, where geologically applicable, seems valid. The two areas would differ in their ability to produce oil on a sustainable basis. Assuming a risk threshold depth of 1500m then it is possible to encounter a zone at 1700m which can produce oil & gas but not on a sustainable basis; whereas at 3200m it is possible to find an oil & gas zone which can produce on a sustainable basis. What would account for the difference? The introduction of the concept of sustainable production allows consideration the following factors which may mitigate the spill, namely :

- Wellbore stability / sand production
- Shallow oil horizons with proven limited production potential
- Wellbore geometry impacts on ability of well to flow

Quite clearly the majority of the oil reservoirs found to a depth of approximately 2500m in the Canadian Beaufort Sea fall into that category. This is somewhat of a generalization but the overall approach should be sound. A thorough analysis of wells drilled to date within the Beaufort Sea should reinforce this point. The majority of wells that Esso has drilled and the shallow prospects in the Gulf acreage such as Tarsuit have not had the potential, from a single package of sand to produce much more that 2500 - 3500 barrels of oil per day.

Wells at these depths also for a variety of reasons previously stated, most probably, do not have the potential for sustained oil production under blowout conditions.

This leaves us with the conclusion that only the penetration of the lower hole sections such as the 12 1/4" and 8 1/2" offer the correct mix of conditions for sustained blowout production. This being the case the number of days that the average well is at risk is much reduced. It is reduced even further when one considers that the majority of exploration targets currently being considered today are less than 4000m. In this situation the time at risk would be during the drilling of the 12 1/4" hole until it was safely cemented.

If one looks at the drilling curve outlined in Figure 1 it is clear that, on average, this period should be in the region of 2-3 weeks at most.

The question then is, should one have the crews at anything other than the full state of readiness during that period. Given that the personnel are allocated full time to oilspill response duties coupled with the fact that the timeframe per well that the well is at risk then it seems foolish to have them at anything other than at full readiness.

The only situation where this would not be the case would be where the operator has put forward, and had accepted, a worst case scenario which shows low oil flows. This being the case then the urgency of the response is not as critical as when the operator projects a 40,000 barrels per day spill.

1.3 The Correct Worst Case Projection

The worst case projection more than any other factor drives the urgency of the oilspill response. The critical factors are the initial rate over the first few days followed by the rate of decline, if any, until the well is successfully killed.

In the most recent case of the Gulf hearing the worst case was defined as 40,000 barrels per day unabated until the well is killed. This means that the initial response is extremely critical since some 80,000 barrels could be spilled during the initial 48 hours of the response.

There was much discussion during the Gulf Kulluk hearing as to the validity of the worst case presented. Gulf stated that the most likely event was at the other end of the spectrum and represented a total spill of 10,000 barrels. Either case seemed flawed but it is clear that some better definition of what a worst case should encompass should be developed.

Quite clearly the worst case was not intended for a worst case event with no mitigating circumstances whatsoever. The worst case should simply be your best Beaufort Sea specific estimate accompanied by any mitigating circumstances that are felt to be valid. Since the worst case is used for purposes of estimating fiscal liability it cannot be assumed that the well will bridge off. The following factors can be used, where appropriate, to mitigate the worst case.

- Wellbore stability - this will have the impact of producing a production decline curve due to sand production and subsequent hole fill-up. It is not logical to present massive amounts of data of the instability of Beaufort Sea sands but then not apply it to the worst case.

- Wellbore geometry - the impact of the wellbore geometry of the flowrate of the well and the subsequent knock-on impact on sand production.

These are by no means the only factors which can be applied however they demonstrate that it is possible to mitigate the impact of a worst case through the application of site specific conditions.

It seems to follow on that it is perhaps more realistic to consider worst case scenarios on a well by well basis rather than an acreage wide or Beaufort Sea basis. When one considers and area as wide as the Beaufort Sea one is opposed to two extremes; the highly productive Amauligak wells and wells such as the 2500 barrels per day Tarsuit wells.

Unfortunately when one has to make a blanket statement about the worst case for a general area one is drawn to the highest rates encountered within that area to date. It therefore follows that some of the prospective inshore fields could be tarred with the Amauligak brush. It therefore seems sensible to have the operator put forward his worst case on a well specific basis thus bringing into play many of the real life mitigating circumstances that exist.

This, in the majority of situations, would bring the blowout volume well below the 10,000 barrels per day mark and thus alleviate the need for a "fire engine" response. The correct analysis of the worst case oilspill directly drives nearly all of the concerns raised at the Gulf hearing and I believe the adoptions of many of the comments made previously will result in much more realistic worst case scenarios.

1.4 Conclusions

The main thrust of this report is to identify the need for a "fire engine" response from the oilspill crews and their equipment and how should one test this response.

The speed of the response should be geared to the severity of the problem. Quite clearly a 40,000 barrels per day blowout merits a fast response whereas a 2500 barrels per day blowout does not pose the same concern in terms of response.

The following are the key conclusions of this review.

- The magnitude of the worst case scenario should drive the speed of the oilspill response during the first several days.
- The worst case scenarios should, most probably, be developed on an individual well basis. This will allow the application of real life mitigative circumstances which will result in a realistic worst case scenario.
- The concept of sustained oil production be introduced into the risk analysis. This will demonstrate that the true risk occurs over a very short period in the operating season and a small proportion of the individual well.
- Having defined the true risk period to be around 14 days in the season it would therefore seem sensible to have the oilspill equipment at full readiness during this period rather than have a staged response.
- The combination of a realistic worst case, coupled with the small period where the well is at risk should produce a low risk of a extremely damaging blowout. This being the case it is felt that the oilspill training could be better geared to deploying equipment in the field rather than a "fire engine " start. It would seem that the key will be the efficiency of what the men and equipment do when they get there rather than whether they are there 1 hour quicker.

NOTICE OF INTENT

Notice is hereby given by Gulf Canada Resources Limited of P.O. Box 130, Calgary on this the 9th day of March, 1990 that the above-named intends to apply to Environment Canada for an Ocean Dumping Permit under the Canadian Environmental Protection Act.

To Load: 1640 litres of Amauligak crude oil.

At Loading Site: Nalluk Base, Tuktoyaktuk, N.W.T.

For the Purpose of: Disposing of oil on ice for the purpose of training personnel in oil spill cleanup technologies.

At Dumping Site: 69° 30' 00" N Lat., 133° 4' 00" Long.

By the Following Method: Discharged out of 205 litre drums.

Proposed Date of Operations: Start: May 13, 1990; Finish: May 19, 1990.

The oil dumped will be removed from the ice through spill clean-up techniques to the satisfaction of an Ocean Dumping Inspector.

For further information regarding this operation please contact:

Mr. Bruce McKenzie
Gulf Canada Resources Ltd.
(403) 233-4800

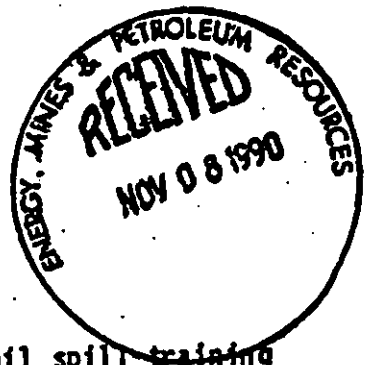
Concerns regarding the environmental aspects of this application or requests for information on the permitting process may be addressed to:

Environment Canada
Environmental Protection Service
P.O. Box 1086
Inuvik, N.W.T.
X0E 0T0
Attn: Tim Coleman
(403) 979-2313

GULF CANADA RESOURCES LIMITED

P.O. BOX 130, CALGARY, ALBERTA T2P 2H7 · TELEPHONE (403) 233-4000

Northern Operations Drilling
March 9, 1990



Tuktoyaktuk Hunters and Trappers Committee
P.O. Box 290
Tuktoyaktuk
Inuvik, N.W.T.
X0E 1C0

Attention: Mr. Frank Pokiak

Dear Mr. Pokiak:

Gulf Canada Resources Limited will be conducting an oil spill training course in Tuktoyaktuk this spring. The purpose of this course is to provide Gulf personnel who would be involved in a spill response, with training in the unique characteristics of cleaning up oil in Arctic conditions. To derive the maximum benefit from the training Gulf is seeking permission to dump 1640 litres of crude oil on the ice. Arctic clean-up techniques will then be demonstrated to the personnel taking the course.

The exercise will involve the spilling of 1640 litres of Amauligak crude oil onto the surface of the ice. This exercise is planned to take place on landfast ice (69° 30' 00" N, 133° 4' 00° W) approximately four nautical miles from the entrance of the Tuktoyaktuk Harbor.

Twenty people will take part in this exercise which will involve cleaning up the oil utilizing in-situ burning techniques.

Gulf has applied for an ocean dumping permit from Environment Canada, to carry out the planned exercise. If approved, the demonstration would be attended by an ocean dumping inspector, and the clean-up would be done to his satisfaction. A representative of the Tuktoyaktuk HTC would also be welcome to attend as an observer.

In accordance with the requirements of the Inuvialuit Final Agreement (IFA) a project description has been forwarded to the Environmental Impact Screening Committee for review at their April, 1990 meeting.

The exercise is planned for the week of May 13-19, 1990. If you wish that Gulf Canada Resources give a presentation on this matter please contact Mr. Terry Antoniuk at (403) 233-3192. If you require further information or have any questions on this proposal please call Mr. Phil Langille at (403) 233-4091.

Regards,

for: Bruce McKenzie
Environmental Advisor

BM/pl/kb

RECEIVED APR - 6 1990

DATE: April 4, 1990

TO: Environmental Screening Committee
P.O. Box 2120
Inuvik, N.W.T.
X0E 0T0

FROM: Tuktoyaktuk Hunters & Trappers Committee
P.O. Box 286
Tuktoyaktuk, N.W.T.
X0E 1C0

RE: GULF CANADA RESOURCES LIMITED - OIL SPILL TRAINING COURSE, MAY 13 - 19, 1990

ATTEN: Marshall Netherwood or Gary Wagner

Please find attached a letter from Gulf Canada Resources Limited dated March 9, 1990 pertaining to the above mentioned.

The Tuktoyaktuk Hunters and Trappers Committee had their last meeting on March 26, and it was then that the Board of Directors reviewed Gulf's letter.

The Board of Director, who were all present, totally disagree with Gulf's plans to have an Oil Spill Training Course in Tuktoyaktuk this spring.

As you will notice in the letter, Gulf's purpose of the Training Course is to provide unique characteristics of cleaning up oil in Arctic conditions and to demonstrate Arctic clean-up techniques to personnel taking the course; however, the Hunters and Trappers Committee are strongly against the Training Course.

In the past, Amoco and Esso Resources did these type of Training Courses. Many times, half of the oil spilled was not successfully cleaned up; furthermore, the amount of oil spilled by Amoco and Esso Resources was less than the amount Gulf wants to spill in the above mentioned course.

We are tired of people using us for their training place. We, the people of Tuktoyaktuk, hunt and fish year round. The last thing we need is an Oil Company help us pollute our land and water.

In addition, Gulf says they want to do this in extreme winter conditions. Tuktoyaktuk is extremely cold during December - March, not in May. Everyone is usually out spring hunting.

2/...

The Hunters and Trappers Committee is anticipating that you take our letter into consideration and support us. The surrounding environment is our life. We depend on it.

Thank you for your time and consideration. The Hunters & Trappers Committee looks forward to your reply.

Yours Truly,

Frank Pokiak
Chairman

FP/ejc

c.c. Bruce McKenzie
Environmental Advisor
Gulf Canada Resources Limited

Minutes from Tuk Community Working Group.

Mar 1/89

Recommendations

The Tuktoyaktuk Working Group is recommending that their proposed highway route be seriously considered for the following reasons.

- Gravel sources are close by.
- Their proposed route misses high hills, valleys and major water sources.
- The Working Groups proposed highway route is in close conjunction with the proposed Natural Gas Pipeline route as shown in the Canadian Pertroleum Association report by R.A. Owens Envirionmental Services Ltd. of May, 1988.
- Noise pollution will be reduced because the highway will be farther away from traditional use areas.
- The Working Groups proposed route will reduce land use conflicts.

4. Ocean dumping

Presently, there are not any conflicts arising from ocean dumping, however, if ocean dumping were to take place the Tuk Working Group has the following concerns.

Concerns

- If hazardous materials were allowed to be dumped in the Beaufort Sea there is serious concern that these materials would enter the food chain.

Recommendations

The Tuk Working Group is recommending that no ocean dumping be allowed in the Beaufort Sea.

5. Airport

The existing main airport is to close to the community.

Concerns

- Noise levels cause a distrubance to community residents.
- Dusty during the summer monthe.

From: Workshop Report for Transportation & Military Ukiah Apr 10-12/89

munities recognize and support the Commission's mandate to prepare a regional land use plan, they hope that the plan does not lose sight of individual community's concerns as identified by each working group. Following are summaries of discussions of each regional concern.

3.2.1.1. Ocean Dumping

The communities are concerned about the long-term effect of ocean dumping on the food chain. They think it is premature for studies to indicate what material is *safe* to dump and, therefore, discourage any dumping in the region.

It was evident that clarification and standardization of the terms *ocean dumping, waste disposal* and *illegal dumping* were required. The communities require more information about regulations governing ocean dumping and drill ship discharge. The current procedures for community input (RODAC and IRC) were noted.

Possible alternatives to dumping were discussed: treat materials prior to dumping, create land-based waste depots, designate ocean dumping sites in deep water, remove waste material from the Territories. It was noted that each of these alternatives had negative aspects and merit thorough consideration before being adopted. Research in the form of a demonstration project was suggested.

No concensus on this issue was reached but the following positions were noted:

- The communities strongly recommend that ocean dumping be prohibited. They believe the only safe disposal method to be removal from the region. They have requested government support for their position.
- The Environmental Protection Service (EPS) currently authorizes controlled dumping of materials deemed to be harmless to the environment.

- There appeared to be general consensus among industry that current regulations adequately protect the environment.

3.2.1.2. Oil Spills

The communities are concerned about the occurrence of oil spills and recognize two types: river spills and ocean spills. They believe present government and industry contingency plans to be inadequate. Last autumn's Fort McPherson spill was cited as an example (Oil spilled into the river from a truck that slipped off the ferry at the Peel River Crossing). Presently, several government agencies can be involved in a spill response, requiring multi-agency coordination and, at times, long distance transfer of equipment. This is unacceptable to the communities as they believe the first 24 hours following a spill are critical. They strongly recommend that two people from each community be trained in spill response and that community-based contingency plans and equipment be established.

NTCL's annual courses in Hay River were identified as a potential training source for local people regarding river spills. Means of training for ocean spills should also be identified. It was noted that a spill response plan that coordinates government agencies (Arctic Sea Strategy) is currently being devised for ocean spills. Bill Mair suggested that an independent, non-government, central oil spill response system be established in the region to ensure immediate and efficient response. Whether this system would supercede others or act in concert with them would depend on its design and jurisdiction.

Although NTCL barges are equipped to handle spills, ferries are not. The communities strongly recommend containment equipment being placed at ferry crossings. DOT promised to consider this and respond.

CONTINGENCY PLAN TESTING WORKSHOP
INUVIK, NOVEMBER 13, 1990

ATTENDEES:

DOUG MATTHEWS	GNWT
SCOTT EDWARDS	IAND - WATER RESOURCES
DON MACWATT	Arvik Environmental Services
SHAWN GILL	COGLA
NICK VANDERKOY	AMOCO
PETER DEVENIS	GULF CANADA
NORM SNOW	INUVIALUIT GAME COUNCIL
GARY PIDCOCK	GULF CANADA
LYNN DIXON	CWS
DAVE TILDEN	EPS
TERRY COOK	CANADIAN COAST GUARD
IAN MARR	CANADIAN COAST GUARD
JOE BALLANTYNE	YUKON GOVERNMENT
TERRY GRAHAM	AMOCO
STEVE POTTER	S. L. Ross Environmental Research
ED OWENS	Woodward-Clyde Consultants
KEN HALL	GNWT
ED HENDERSON	GNWT
BILL MACKIE	Beaufort Sea Co-op
BRUCE HANBRIDGE	Joint Secretariat

EXECUTIVE SUMMARY
TASK GROUP REPORT ON MAXIMIZING INUVIALUIT INPUT INTO CONTINGENCY PLANS

The Environmental Impact Review Board held hearings into the Esso, Chevron et al Isserk I-15 well in Tuktoyaktuk in October,1989. At the conclusion of the hearings, the Board made several recommendations and observations on the subject of Inuvialuit involvement in oilspill contingency plans.

A workshop held the following March further reviewed the matter and concluded that contingency plans could benefit from local input, both in the planning and the operational stage. In light of this conclusion, a task group was charged with reviewing existing oilspill contingency plans with the intent of maximizing Inuvialuit involvement.

This paper suggests a number of forums which might be utilized by Inuvialuit to ensure their concerns are accounted for in the development and operation of contingency plans.

The paper also recommends that a joint government-industry- -Inuvialuit oilspill exercise be held in the summer of 1991 to identify opportunities for Inuvialuit to become further involved in oilspill contingency plan development and implementation.

RECOMMENDATION ARISING FROM THE TASK GROUP REPORT ON MAXIMIZING INUVIALUIT INPUT INTO CONTINGENCY PLANS

A joint government-industry-Inuvialuit paper exercise should be held this summer to address an oil spill scenario. Such an exercise would highlight both opportunities for Inuvialuit involvement and trouble spots which need resolution prior to an actual spill. The exercise would be surprise in nature to the extent possible and would involve an existing company contingency plan. It would not be the intent to test the company plan so much as it would be to provide a realistic appraisal of opportunities for local involvement.

BACKGROUND

The Environmental Impact Review Board (EIRB) hearings into Esso's Isserk I-15 well application took place in Tuktoyaktuk in October of 1989. During the course of the hearings, a number of concerns were raised about the completeness of both company and government contingency plans designed to respond to an oil spill.

At the conclusion of the hearings the EIRB concluded that the well program should proceed, but that the appropriate regulatory body should attach several conditions to the authority to drill a well. Among these was the condition that:

> " Existing contingency plans relative to a major oil spill at Isserk I-15 should be adjusted to ensure Inuvialuit participation in the determination of protection and clean up priorities, countermeasure implementation and program monitoring. This should be completed and reviewed by the competent regulatory body prior to the penetration of the environmental risk zone. "

In addition to the suggested conditions, the EIRB attached several general observations which went beyond the Isserk well and which were meant to ensure Inuvialuit involvement in all oil spill contingency planning in the region. The Board recommended that more local people be trained in oil spill cleanup and that

> ".....Inuvialuit be involved in contingency planning from the earliest stages of the project design. This will improve the workability of proposed measures and give industry, Inuvialuit and government agencies a better appreciation of the problems involved. "

Following the submission of these and other recommendations and observations by the Board, a workshop was held in Inuvik in March, 1990 to review progress on concerns raised at the Isserk hearings. A number of unresolved issues were identified at this workshop and resulted in recommendations for action. In the case of this particular report, the recommendation was to:

> " Review the existing oil spill contingency plans in light of any new information with the intent of maximizing Inuvialuit input. Focus on relationships between Industry, community and Inuvialuit spill response plans. "

The balance of this paper attempts to respond to this direction and to describe ways in which Inuvialuit can become meaningfully involved in oil spill contingency planning and response.

CONTINGENCY PLANS

We might usefully begin with a description of industry and government contingency plans and note the difference between the two. While both are called contingency plans, there is a different purpose associated with each and as a consequence different components within each. Further, there is a difference in approach among the government plans.

a.) **Industry plans** are generally prepared by the potential polluter himself, particularly in the case of oil exploration and development activities. The existence of such plans is very often a regulatory requirement and they are typically reviewed by the regulator before permission to operate is granted.

Such plans generally have four main components, as follows:

- An organization plan which sets out lines of command;
- Equipment description and location information which describes the type of equipment available to handle an incident and its availability;
- A plan of action which describes in some varying degrees of detail the response necessary to an incident, including reporting requirements, equipment deployment, and the like; and
- A training component to ensure that staff are familiar with oilspill operations. This section often describes both the courses already taken by staff and those planned for the near future.

b.) **Government plans**, on the other hand, are usually less concerned with the "hands on" task of containment and recovery of spills, and are more oriented toward ensuring coordination of government response. These plans typically designate a "lead agency" in the event of a spill and appoint an emergency response coordinator who deals directly with the On-Scene Commander named in the Industry plan.

The type of detail within a government oilspill plan will change with the agency involved. Current government policy calls for the determination of the lead agency to be dependent upon the source of the spill. At present, the distribution is as follows:

Spills from ships & barges	Canadian Coast Guard
Spills from oil and gas exploration & production facilities	COGLA
Spills from facilities/ operations permitted by DIAND legislation	DIAND

The government plan typically contains an organization chart which can be quite extensive, but its equipment, action plan, and training components are not nearly so detailed as those found in an industry plan. In the case of the three agencies listed above, the plan contents vary greatly.

The Canadian Coast Guard maintains dedicated oilspill equipment at a number of sites throughout Canada and the North. Due to the international origins of marine shipping and the requirements of marine law, ship owners are not required to carry significant amounts of pollution control equipment on board their vessels. Consequently the CCG must have the equipment available when needed. As ship traffic is by its very nature not fixed by location, CCG plans generally are not detailed as to response techniques such as shoreline protection. There is no way of foretelling where the spill may occur (except of course in the case of harbour incidents where response is planned) and therefore the CCG plan tends to be equipment-specific but location-general.

DIAND has responsibility for spills which occur from facilities which are operating under permit from that agency. However, while DIAND may be desigated as a lead agency in the event of a spill, it has no equipment of its own. Its role is to coordinate the response of the resource agencies it would call to physically handle the spill.

COGLA's responsibility is to oversee industry preparedness to handle an oil spill from drilling operations on frontier lands. Government policy has been to ensure that the operator is capable of handling any spill which may occur so that the first line of response is the operator. Government is to intervene only when the operator's response to a spill is inadequate, whether as a result of operator inability or event scale and complexity. Because of the many types and combinations of emergencies which could occur COGLA contingency plans are not detailed as to the agency's dedicated resources or standard response format.

The purpose of the plans varies from actually responding to and cleaning up a spill (CCG Arctic Marine Emergency Plan), to providing technical advice to the industry On-Scene Commander (COGLA Emergency Response Plan), to undertaking scientific research on the fate and effects of a spill (DFO Scientific Response Plan to Spills in the Beaufort Sea). In the case of oil spills from drilling operations, it is only under the most exceptional circumstances that the regulator would go beyond the provision of advice to actually taking control of response operations.

It should be clear then that the term "contingency plan" has a number of different definitions depending upon both purpose and agency. Likewise, the opportunity for "maximizing Inuvialuit input" will vary greatly with the type of plan.

INUVIALUIT INVOLVEMENT

It is not a simple matter to maximize Inuvialuit input into oil spill contingency planning in the Arctic.

There are at present some fifteen government emergency response plans relating to Arctic marine spills (Appendix) and, as noted, each petroleum operator must have a contingency plan on file for handling any spills from drilling operations. In addition to the wide variety of plans, there are a number of possible forms of inputs, ranging from the identification of areas of environmental sensitivity to the provision of oil spill cleanup workers. The third element needed to ensure Inuvialuit involvement is the identification of the most appropriate forum through which the inputs can be directed to the applicable plan.

Of the fifteen plans listed in the Appendix, this paper will deal with eight, the balance being either beyond the geographic area of the Beaufort or variations on one of the eight.

The form of possible input can be limited to three general areas, namely:

- pre-planning - which includes the identification of sensitive sites and the determination of possible mitigative measures;
- policy establishment - which would include such areas as socio-economic concerns and level of response to a spill; and
- spill response measures - which would describe response priorities based on real time information.

The forums through which Inuvialuit input might be delivered are many and include community bodies, Inuvialuit agencies, various regulatory boards, and government bodies.

A matrix showing the possible tie in of the three elements, the plans, the input form, and the forums, is presented here:

FORM	Pre-Planning	Policy Issues	Spill Response
PLAN			
DFO Scientific Response Plan for Spills in the Beaufort Sea	FJMC		
DFO Arctic Marine Emergency Plan	FJMC		FJMC
INAC-NAP Arctic Waters Emergency Response Plan	ILA		AREET
COGLA Emergency Response	ESC/EIRB Workshops	ESC/EIRB Workshops	AREET
CCG Arctic Marine Emergency Plan			AREET
Canada-United States Joint Marine Pollution Contingency Plan	Joint Meetings	Joint Meetings	
Operational Plan for the Arctic Regional Environmental Emergency Team (AREET)	AREET	AREET	AREET
Company contingency plans	Community meetings	Community meetings	AREET
	ESC/EIRB	ESC/EIRB	ILA
	Compensation Agreement DIZ Society	Compensation Agreement DIZ Society	

The foregoing matrix indicates there are a number of options available for Inuvialuit participation in contingency planning and oil spill response. The options, while by no means exhaustive, show how Inuvialuit input into oilspill contingency planning may be put forward through a number of forums, including membership on planning bodies such as AREET and both representation on and appearances before regulatory bodies such as the Environmental Screening Committee and the Environmental Impact Review Board.

Detailed information on the various plans are presented in the work of Task group # 5 and need not be repeated here.

The information presented is meant to be descriptive rather than presecriptive and consequently no recommendations follow from this section of the paper.

OIL SPILL RESPONSE

In the event of a spill, Inuvialuit involvement will take many forms, ranging from the provision of environmental advice to actual assistance in the physical removal and disposition of the oil.

As is apparent in the matrix above, much of the environmental information provided by Inuvialuit may well be through their membership in AREET. There are, however, a number of other tasks which will need to be done and the appropriate methods of doing them will need to be developed in advance of an incident.

These tasks will include membership on shoreline clean-up assessment teams (SCATs), the provision of access permits by ILA, a method for the quick review of waste disposal options, the provision of support staff, the mitigation of socio-economic impacts, and a range of other tasks which will undoubtedly strain the ability of the Inuvialuit organizations to the fullest.

In order to more fully understand these demands and better prepare for them, a joint government-industry-Inuvialuit paper exercise should be held this summer to address an oil spill scenario. Such an exercise would highlight both opportunities for Inuvialuit involvement and trouble spots which need resolution prior to an actual spill. The exercise would be surprise in nature to the extent possible and would involve an existing company oilspill contingency plan. It would not be the intent to test the company plan so much as it would be to provide a realistic appraisal of opportunities for local involvement.

List of Emergency Response Plans Pertaining to Arctic Marine Spills

The following plans are retained on file with AREET Team Chairman at EP in Yellowknife:

1. Response to Peacetime Emergencies in the Northwest Territories. Atmospheric Environment Service, Western Region, Edmonton, 1986.

2. Central Region Environmental Emergency Plan. Atmospheric Environment Service, Central Region, Winnipeg, 1987.

3. Eastern Region Environmental Emergency Response Plan. Atmospheric Environment Service, Quebec Region, Montreal, 1987.

4. Scientific/Studies To Be Conducted In Response To An Oil Spill in the Beaufort Sea. Scientific Response Plan of the Department of Fisheries and Oceans, Western and Northern Region, Winnipeg, 1979.

5. DFO Arctic Marine Emergency Plan. Department of Fisheries and Oceans, Institute of Ocean Sciences, Pacific Region, Vancouver, 1986.

6. INAC-NAP Arctic Waters Emergency Response Plan. Indian and Northern Affairs Canada - Northern Affairs Program, Yellowknife, 1987.

7. COGLA Emergency Response Plan. Canada Oil and Gas Lands Administration, Northern Region, Yellowknife, 1987.

8. CCG-Western Region Marine Contingency Plan. Canadian Coast Guard, Department of Transport, Western Region, Vancouver, 1986.

9. Canada-United States Joint Marine Pollution Contingency Plan. Canadian Coast Guard, Department of Transport/United States Coast Guard, United States Department of Transportation, Ottawa/Washington, Revised Edition, 1986.

10. CCG Arctic Marine Emergency Plan. Canadian Coast Guard, Department of Transport, Ottawa, 1979.

11. Marine Environment Co-operative Agreement With Denmark Regarding Combatting Pollution Between Greenland and Canada. Canada Department of External Affairs/Denmark Department of External Affairs, Ottawa, Copenhagen, 1980. (NOTE: The Coast Guards of Canada and Denmark are in the process of ratifying a Canada/Denmark Joint Marine Pollution Contingency Plan which should be officially released in 1988)

12. Arctic Seas Strategic Plan. Indian Northern Affairs Canada - Northern Affairs Program, Yellowknife, 1986.

13. Federal Peacetime Emergency Co-ordination Procedures - Northwest Territories. Emergency Preparedness Canada, Alberta and Northwest Territories Region, Edmonton, and Department of Indian Affairs and Northern Development, NWT Region, Yellowknife, 1981.

14. Government of the Northwest Territories and Support Plan for Major Pollution Incidents in the Arctic Seas. Government of the NWT, Department of Government Services, Emergency Services, 1987.

15. Operational Plan for the Arctic Regional Environmental Emergency Team (AREET). Environmental Protection, Environment Canada, Western and Northern/Pacific and Yukon Regions, Yellowknife/Whitehorse District Offices, 1987, Revised 1990.