MINERALS MANAGEMENT SERVICE
ALASKA OCS REGION

District Office

DATA TRANSMITTAL FORM

Lease	Well	Description
0866	1	LIS TAPE + Listing ✓
		ARRAY Induction 2" ✓✓
		" " 5" ✓✓
		Dipole Sonic 2" ✓✓
		" " 5" ✓✓
		Litho Density - Neutron 2" ✓✓
		" " 5" ✓✓
		MDT/RFT ✓✓
		Production Log ✓✓
		CST Shot Record ✓✓

Signed By: [signature] Date: 12-16-92

Provided To: AREA Office
(Section)

☐ a. Borrowed Data Date Borrowed Data Returned: _____

The undersigned accepts responsibility for the security of the proprietary data listed above until it is returned to the District Office, and agrees to abide by the restrictions on proprietary data storage and use. The material must be kept in a Security Area when not in active use. The borrower may not duplicate, divulge, or transmit these data to another office without the prior approval of the District Supervisor.

☒ b. Transmitted Data to OFO Vault

Please acknowledge receipt by signing below and retaining the original copy of this form for your records.

Signature: Tina L Booton Date: 12-17-92

MINERALS MANAGEMENT SERVICE
ALASKA OCS REGION

District Office

DATA TRANSMITTAL FORM

Lease	Well	Description
0866	1	✓MicroPaleo Biostratigraphic Rpt
		Borehole Seismic Rpt
		✓ADT Well Summary Rpt
		✓DGSI Prel. Geochemical Data 16 pgs; 2 pgs; 33 pgs
		✓Halliburton Reservoir DST
		✓Sperry-Sun LWD Tape + Listing
		✓Sepias of Engineering Log, Mud Log, Gas Analysis, FEWD Log
		✓LIS open hole tape & listing
		✓FMI Tapes 1 of 2 & 2 of 2 + Listings

Signed By: [signature] Date: 12-7-92

Provided To: Area office
(Section)

☐ a. Borrowed Data Date Borrowed Data Returned: _____

The undersigned accepts responsibility for the security of the proprietary data listed above until it is returned to the District Office, and agrees to abide by the restrictions on proprietary data storage and use. The material must be kept in a Security Area when not in active use. The borrower may not duplicate, divulge, or transmit these data to another office without the prior approval of the District Supervisor.

☑ b. Transmitted Data to OFO Vault

Please acknowledge receipt by signing below and retaining the original copy of this form for your records.

Signature: Tina DeBoston Date: 12-8-92

United States Department of the Interior

MINERALS MANAGEMENT SERVICE
Alaska Outer Continental Shelf Region
949 E. 36th Avenue, Room 603
Anchorage, Alaska 99508-4302

IN REPLY REFER TO:

DR Choyanski 11-17-92

NOV 17 1992

Michael Winfree
ARCO Alaska, Inc.
Post Office Box 100360
Anchorage, Alaska 99510-0360

Mr. Winfree:

In reviewing our well data files for the Kuvlum OCS-Y-0866 #1 Well, we noted the following data have not been received as per the approved Conditions of Approval to Drill for Oil and Gas.

1) Final composite well logs: 2 blueline, 1 sepia
2) Final composite LIS tape
3) Second copy of the FMI Images log, and a copy of the digital tape
4) Second blueline copies and one sepia copy of the Formation Evaluation (mudlog), Engineering log, FEWD/MWD log, and Gas Analysis log
5) Sidewall core descriptions: 2 copies
6) Sidewall core analysis: 2 copies
7) Final Biostratigraphic report: 2 copies
8) Final Geochemical report: 2 copies
9) Second copy of the Halliburton DST Analysis
10) Second copy of the Sperry-Sun Final Well Summmary Report
11) Final Well Seismic Report\VSP\Velocity: 2 copies
12) Final Directional Survey: 2 copies

Please submit these data by December 14, 1992.

If you have any questions regarding these requirements please give me a call at (907) 271-6066.

Sincerely,

Orig. Signed by
D. Choromanski

Acting Supervisor, District Office
Field Operations

bcc: 0866#1 6A-Area/District
Chrons-Area/District/CC/RD
DChoromanski:11-12-92:dc\Kuvlet1

DEPARTMENT OF THE INTERIOR
MINERALS MANAGEMENT SERVICE
DATA/INFORMATION SECURITY AGREEMENT

DATA/INFORMATION REQUESTED OR TO BE EXAMINED: Complete suite of geophysical logs (sonic, gamma, electric logs, density, SP's, etc) mud logs, driller's logs, drilling history, drill stem test data, geochemical analyses of fluids and cuttings samples, Paleo analyses: and any other pertinent logs or analyses e.g. vertical seismic profile and geolog, etc.

FOR REVIEW FROM AND/OR USE UNTIL: From present until 120 days after the last of the logs or analyses become available for study.

AUTHORIZED NEED-TO-KNOW: Arthur Banet for the Bureau of Land Management

The recipient "Secondary Office of Control": (1) agrees to provide for secure storage of these proprietary data and information derived therefrom, according to the same or more secure standards than are presently employed by the Minerals Management Service (MMS) (MMSM 386.1, attachment 2); (2) agrees not to transmit or otherwise divulge data/information including any derivative information, to any other party; (3) agrees to return the proprietary data and all copies, notes, tracings, or other reproductions thereof, to the Primary Office of Control at the end of the requested period; (4) is aware that under the provisions of 30 CFR 250.18(b)(2) for a lease in effect, and within the primary term specified in the lease, the data and information may be released 2 years after submission of the data or information or 60 days after a lease sale such that any portion of an offered block is within 50 miles of the well, which ever is later, and no data/information are to be released without consent of the Primary Office of Control; and (5) is aware that penalties for unauthorized disclosure provided in TITLE 43 UNITED STATES CODE, SECTION 1350, OUTER CONTINENTAL SHELF LANDS ACT (appendix 3, MMSM 386.1 located in attachment 2) apply to these data/information.

SIGNATURE: _____
Edward F. Spang (Recipient/Secondary Office of Control)

TITLE: State Director, Bureau of Land Management

ORGANIZATION: Department of the Interior - Bureau of Land Management

DATE: November 20, 1992

RECEIVED
11:30 AM
NOV 23 1992

REGIONAL DIRECTOR, ALASKA OCS
Minerals Management Service
ANCHORAGE, ALASKA

The Secondary Office of Control has established a "need-to-know" and agrees to abide by all restrictions on proprietary data/information use. The proprietary data/information requested above are to be examined by the Secondary Office of Control at the Office of the Primary Office of Control.

SIGNATURE: Barry A Boudreau
Rodney A. Smith

TITLE: Regional Supervisor, Field Operations
(Primary Office of Control)

DATE: November 27, 1992

United States Department of the Interior

MINERALS MANAGEMENT SERVICE
Alaska Outer Continental Shelf Region
949 E. 36th Avenue, Room 603
Anchorage, Alaska 99508-4302

IN REPLY REFER TO:

TAKE PRIDE IN AMERICA

T. 933

NOV. 1 3 1992

Memorandum

To: State Director, Bureau of Land Management

From: Regional Director, Alaska Outer Continental Shelf Region, Minerals Management Service
Alan D. Powers

Subject: Request for Proprietary Information

We have reviewed your letter of October 29, 1992, requesting access to proprietary data and information from the ARCO Alaska, Inc. Kuvlum #1 well, Lease OCS-Y 0866. We have determined that the Bureau of Land Management (BLM) has a need to know based on the purpose for which access is requested and the intended use of the proprietary data and information. The data and information are being released to BLM, Alaska State Office, under the provisions of Part 386 of the Minerals Management Service (MMS) Manual. The Regional Supervisor, Field Operations, MMS, Alaska Outer Continental Shelf (OCS) Region, is the Primary Office of Control. The provisions for protection and release of proprietary data and information, and the penalties for unauthorized release of proprietary data are contained in the OCS Lands Act and 30 CFR 250.

Your designated representative, Arthur Banet, has advised us that he only wants to review data at this time; however, as you know, the subject data, and any derivative information or analyses obtained therefrom, are proprietary and are considered extremely sensitive due to the lack of subsurface well information in the area and the significance of this well to interpreting the geology of the eastern Beaufort Sea.

You should be aware that we cannot predict when the well data from Lease OCS-Y 0866 will be released to the public. As specified by 30 CFR 250.18(b)(2), the well data may be released 2 years following submission of the well data after completion of the well, or 60 days after a subsequent lease sale offering a tract within 50 miles of the well, whichever is later. The well data you will be reviewing could remain in a confidential status well beyond the 2 year minimum period of protection.

You have assured us in your letter that BLM understands the sensitive nature of the Kuvlum #1 well, Lease OCS-Y 0866; BLM agrees to maintain the confidentiality of all data which it views or gains access to, and will maintain the confidentiality of all

information and interpretations gained from the data as stated in the OCS Lands Act and regulations, and in the MMS Manual, Part 386. Accordingly, we will make the Kuvlum #1 well, Lease OCS-Y 0866, available for review by your designated individual.

We have attached a Data/Information Security Agreement for you to complete. Please list the data and information which your designated representative will examine, and the date which you request it be made available. Upon receipt of the signed agreement, we will contact your designated representative and make the data and information available for his review at a secure location. We will also prepare a Data/Information Security Access Receipt for his signature, which will list each item of proprietary data and information made available for his examination and any data or derivative information, such as notes, tracing, etc., to be removed by him. Because of the high value of the information for this offshore well and the high sensitivity of the information which you have requested to examine, authority to divulge or reproduce proprietary information to any other party is NOT granted. Should it become necessary to transmit or divulge this information to another party, security agreements will need to be obtained from this office for each individual receiving the information or data. If you have any questions on this procedure, please contact me at (907) 271-6010.

Attachment

United States Department of the Interior

MINERALS MANAGEMENT SERVICE
Alaska Outer Continental Shelf Region
949 E. 36th Avenue, Room 603
Anchorage, Alaska 99508-4302

IN REPLY REFER TO:

MMS — ALASKA OCS REGION

NOV. 13 1992

3	Reg. Dir.	
	Dep. Reg. Dir.	11-13
2	RSFO	
	RSLE	
	RSRE	
	Ch., OPS	
	PAO	
1	Ros	BB 11/13

Memorandum

To: State Director, Bureau of Land Management

From: Regional Director, Alaska Outer Continental Shelf Region, Minerals Management Service (sgnd) Alan D. Powers

Subject: Request for Proprietary Information

We have reviewed your letter of October 29, 1992, requesting access to proprietary data and information from the ARCO Alaska, Inc. Kuvlum #1 well, Lease OCS-Y 0866. We have determined that the Bureau of Land Management (BLM) has a need to know based on the purpose for which access is requested and the intended use of the proprietary data and information. The data and information are being released to BLM, Alaska State Office, under the provisions of Part 386 of the Minerals Management Service (MMS) Manual. The Regional Supervisor, Field Operations, MMS, Alaska Outer Continental Shelf (OCS) Region, is the Primary Office of Control. The provisions for protection and release of proprietary data and information, and the penalties for unauthorized release of proprietary data are contained in the OCS Lands Act and 30 CFR 250.

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information and interpretations gained from the data as stated in the OCS Lands Act and regulations, and in the MMS Manual, Part 386. Accordingly, we will make the Kuvlum #1 well, Lease OCS-Y 0866, available for review by your designated individual.

We have attached a Data/Information Security Agreement for you to complete. Please list the data and information which your designated representative will examine, and the date which you request it be made available. Upon receipt of the signed agreement, we will contact your designated representative and make the data and information available for his review at a secure location. We will also prepare a Data/Information Security Access Receipt for his signature, which will list each item of proprietary data and information made available for his examination and any data or derivative information, such as notes, tracing, etc., to be removed by him. Because of the high value of the information for this offshore well and the high sensitivity of the information which you have requested to examine, authority to divulge or reproduce proprietary information to any other party is NOT granted. Should it become necessary to transmit or divulge this information to another party, security agreements will need to be obtained from this office for each individual receiving the information or data. If you have any questions on this procedure, please contact me at (907) 271-6010.

Attachment

bcc: (OCS-Y 0866 (ARCO Kuvlum Well) 6A / REC 13-1
Chrons(area/dist/ros/cc/rd)

F:\USERS\ROS\BENNETT\BBennett:nep:final:111392\BLM_DATA.REQ

DEPARTMENT OF THE INTERIOR
MINERALS MANAGEMENT SERVICE
DATA/INFORMATION SECURITY AGREEMENT

DATA/INFORMATION REQUESTED OR TO BE EXAMINED: _____

FOR REVIEW FROM AND/OR USE UNTIL: _____

AUTHORIZED NEED-TO-KNOW: _____

The recipient "Secondary Office of Control": (1) agrees to provide for secure storage of these proprietary data and information derived therefrom, according to the same or more secure standards than are presently employed by the Minerals Management Service (MMS) (MMSM 386.1, attachment 2); (2) agrees not to transmit or otherwise divulge data/information including any derivative information, to any other party; (3) agrees to return the proprietary data and all copies, notes, tracings, or other reproductions thereof, to the Primary Office of Control at the end of the requested period; (4) is aware that under the provisions of 30 CFR 250.18(b)(2) for a lease in effect, and within the primary term specified in the lease, the data and information may be released 2 years after submission of the data or information or 60 days after a lease sale such that any portion of an offered block is within 50 miles of the well, which ever is later, and no data/information are to be released without consent of the Primary Office of Control; and (5) is aware that penalties for unauthorized disclosure provided in TITLE 43 UNITED STATES CODE, SECTION 1350, OUTER CONTINENTAL SHELF LANDS ACT (appendix 3, MMSM 386.1 located in attachment 2) apply to these data/information.

SIGNATURE: _____
Edward F. Spang (Recipient/Secondary Office of Control)

TITLE: State Director, Bureau of Land Management

ORGANIZATION: _____

DATE: _____

The Secondary Office of Control has established a "need-to-know" and agrees to abide by all restrictions on proprietary data/information use. The proprietary data/information requested above are to be examined by the Secondary Office of Control at the Office of the Primary Office of Control.

SIGNATURE: _____

Rodney A. Smith

TITLE: Regional Supervisor, Field Operations
(Primary Office of Control)

DATE: _____

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
ALASKA STATE OFFICE
222 W. 7th Avenue, #13
ANCHORAGE, ALASKA 99513-7599

TAKE PRIDE IN AMERICA

29 OCT 1992

3000 (985)

Mr. Allen Powers, Regional Director
Alaska OCS Region
Minerals Management Service
949 East 36th Avenue
Anchorage, Alaska 99508-4302

Dear Mr. Powers:

Pursuant to our ongoing oil and gas analysis of the Coastal Plain of the Arctic national Wildlife Refuge (ANWR) and as required by Minerals management Service (MMS) Manual 386.1 and 386.4, the Bureau of Land Management (BLM) is requesting access to well number OCS Y0866 #1, also known as the ARCO Kuvlum #1 well, for which MMS is the primary office of control.

To continue evaluation of new information which may bare an interpretation of the 1002 area, BLM needs information on stratigraphy, types of sedimentary and nonsedimentary rocks, quality of source rocks, amount of reservoir rock, porosity, permeability, geothermal gradient, and the presence of absence of petroleum indicators. This would require that BLM have access to all drill-stem test reports, drilling reports, geophysical logs, and any samples which might be available. Without well information, the above geological parameters become open to speculation.

To help meet MMS concerns about well sensitivity, BLM would be satisfied with using the well data at the MMS facilities. To help ensure confidentiality, Arthur Banet would be the only Geologist requiring immediate access to this data (although in the future, a second person, Robert Bascle, may be required to assist him). Should Mr. Banet not be able to fulfill this function, either through incapacitation or career transfer, than Mr. Bascle would be the

BLM geologist who would replace Mr. Banet. Should Mr. Bascle not be able to fulfill this function through incapacitation or career transfer, then BLM will make a formal request to MMS to replace Mr. Bascle.

BLM understands the sensitive nature of the Kuvlum well and agrees to maintain the confidentiality of all data to which it gains access and to maintain the confidentiality of all information and interpretations gained from that data as stated in MMS Manual, Part 386, and would be willing to sign the proper MMS from to that effect.

The BLM hopes that this request meets your concern about the sensitivity of the Kuvlum well and the BLM "need to know". We look forward to further cooperation in the future between our two agencies. Your prompt action on this request would be appreciated.

Edward F. Spang
State Director, Alaska

FILE UNDER:

U.S. DEPARTMENT OF THE INTERIOR
MINERALS MANAGEMENT SERVICE

ROUTING of this TELEPHONE CONVERSATION RECORD:

Date: 12/14/92

1 DRS
2 ~~ORA~~ Tom/Jim/Bill
3 T. Warren / P. Cosey
4 ROS
5
6

Time in office
originating call
receiving call

NOTE: Last reader discards this copy unless it is needed other than as referenced above.

Call to: R. Smith
Title & Organization
area or FTS ( ) -

Call from: Dave Sutter
Title & Organization
area or FTS ( ) -

SUBJECT: Kuvhum Unitization

Set a meeting for 1:30 pm on Wed 12/16 to discuss questions on the subject raised at pardners meeting

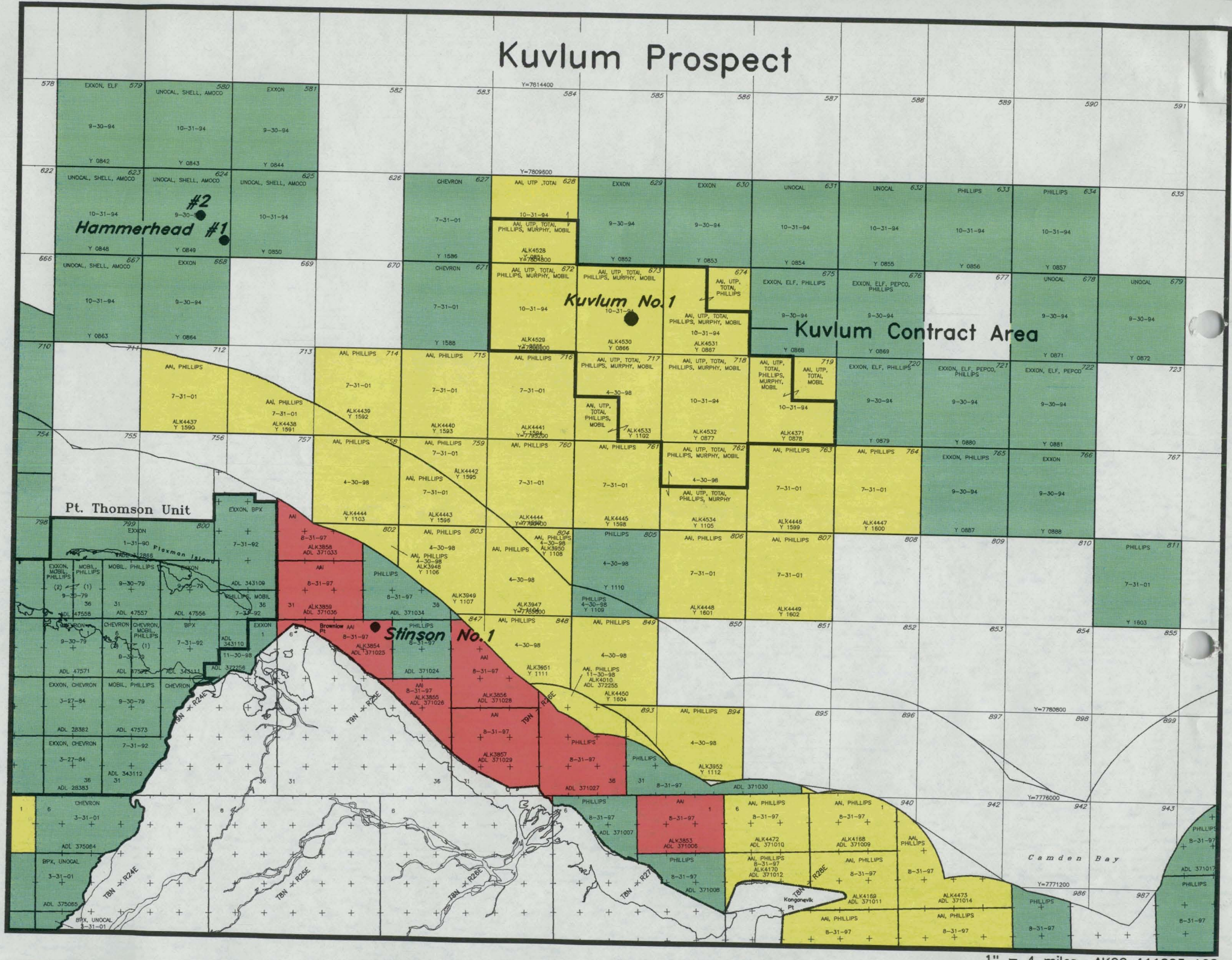
Dave says he is replacing Mike Gregory on this project; will have Mike and one or two others with him.

Its in the 6th Fl Conference Rm

Please let me know who you would send to the meeting

R. Smith

FORM MMS 2002 (Apr 1983)


Kuvlum Prospect
Hammerhead #1
#2
Kuvlum No.1
Kuvlum Contract Area
Stinson No.1
Pt. Thomson Unit
Flaxman Island
Brownlow Pt
Konganevik Pt
Camden Bay
Y=7814400
Y=7809600
Y=7804800
Y=7800000
Y=7795200
Y=7790400
Y=7785600
Y=7780800
Y=7776000
Y=7771200
TBN R24E
TBN R25E
TBN R26E
TBN R27E
1" = 4 miles AK92 111003 A00

ARCO Alaska, Inc.
Post Office Box 100360
Anchorage, Alaska 99510-0360
Telephone 907 276 1215

November 12, 1992

Mr. Dave Howekamp
Director, Air & Toxics Division
U. S. Environmental Protection Agency
75 Hawthorne Street
Mail Stop A-1
San Francisco, CA 94105-3901

RE: Kuvlum Air Permit

Dear Mr. Howekamp:

On October 5, 1992, ARCO Alaska, Inc. (ARCO) submitted a Transitional Permit Application (TPA) to Region IX under 40 CFR Part 55.6(e) (57 Fed. Reg. 40792), and § 328 of the Clean Air Act. Submittal of this TPA authorized continued exploratory drilling at the Kuvlum prospect, on the federal Outer Continental Shelf in the Beaufort Sea of Alaska.

As you may know, the initial Kuvlum well, which commenced drilling on August 12, 1992 and finished October 14, 1992, discovered a significant hydrocarbon deposit. ARCO and its partners plan to continue exploratory operations to determine the significance of the discovery. Continued exploratory operations may require two additional consecutive wells during the summer of 1993. The drilling program for subsequent years will depend upon the results of next summer's work and favorable ice and weather conditions. Consequently, we wish to obtain a final air PSD permit which will authorize this exploration project on a generic basis, and allow us flexibility to conduct additional multi-year exploratory drilling operations. Given that ice conditions are unpredictable and highly localized, we are proposing that the permit authorize drilling operations at yet undetermined locations which would be identified and communicated to EPA on relatively short notice.

After reviewing EPA and State regulatory provisions and permitting practices for onshore sources, we believe that the current, established approach to the permitting of temporary and portable sources provides full authority for a permit which would meet our needs. As you know, the federal PSD regulations specifically limit air quality analysis

requirements for these sources, and authorize changes in operating location under streamlined procedures. Further, the State of Alaska has long included very similar provisions in operating permits tailored to temporary and portable sources. We will provide to you shortly copies of several examples of these State permits. Since the express intent of Section 328 is to fashion federal offshore permit requirements equivalent to those in State permits for similar sources, this established State pattern, in our view, should serve as the model for the final Kuvlum permit.

We will be able to identify with some certainty the probable locations for 2 wells in the Kuvlum area for next summer, but are unable at this time to specify future or alternative exploratory well locations, and when those wells might be drilled. Accordingly, we propose that the Section 328 permit be written to provide for temporary operations at sites in the federal OCS in the general Camden Bay, Beaufort Sea region for a period of 5 years for the Kulluk rig and associated support vessels. The Kulluk and associated vessels are the emission sources already inventoried in the TPA. As soon as a precise location for a new well was known, we would provide notice to your agency. ARCO would also be willing to provide modeling and increment consumption data which would define the worst case emissions impacts at locations within the defined region, although in our view such data is not legally required for "temporary" sources. We will, of course, provide any additional information necessary for the agency to make a BACT determination, to the extent such information has not already been supplied in the TPA.

Lastly, although we currently intend to use the Kulluk rig to drill at least the 1993 exploratory wells, we would like to urge EPA to include a provision in the permit recognizing our right, subject to EPA review and approval, to substitute another rig and support vessels with similar emissions patterns and BACT features. This is necessary because of the short drilling season, the small universe of qualified drilling vessels, and the unpredictability and difficulty of Arctic operations. Moreover, we would like to explore with you the issue of how a second rig might be permitted to operate simultaneously with the first.

Because of the uniqueness of this situation and our need to finish the final permit application as soon as possible to avoid delays during the coming 1993 summer season, we have proposed to discuss these issues with you and Region X at the

very earliest convenience. We have been proceeding on the basis that Region IX will continue to handle the Kuvlum permitting, although the source will be located geographically in Region X. If there are any questions about the locus of permitting responsibility within the agency, we would appreciate your letting us know.

In a November 10, 1992 discussion with Ms. Kelly Fortin of your office, November 23, 1992 was targeted for a meeting to discuss this permit. We would like to proceed with you and others in Region IX on November 23, 1992 in San Francisco, and then meet with Region X on November 24, 1992 in Seattle. Please let us know if this is not satisfactory.

Thank you for your assistance in this matter.

Very truly yours,

Mark J. Schindler
Director, Exploration
Permits and Compliance

/cs

c: Allen Zobel, EPA, Region IX
Office of Regional Counsel (RCZ)

Rod Smith
MMS, Anchorage

Phillip Milam, EPA, Region X

Raymond Nye, EPA Region X

Thomas Kiernan, EPA, Washington, D.C.

Kelly Fortin, EPA Region IX

kuvlum.ltr

ARCO ALASKA, INC.

FAX COVER SHEET

November 13, 1992

Page 1 of 4

FROM:	TO:
Mark J. Schindler	Rod Smith
COMPANY NAME:	**COMPANY NAME:**
ARCO, ATO-1932	MMS
PHONE NUMBER:	**PHONE NUMBER:**
907/263-4766	
FAX NUMBER:	**FAX NUMBER:**
907/265-6998	271-6504

MESSAGE

Confirm/Verify: (907) 265-6546

MINERALS MANAGEMENT SERVICE
ALASKA OCS REGION

District Office

DATA TRANSMITTAL FORM

Lease	Well	Description
[redacted]	1	MDT 1 Sepia
		Core samples TAKEN 1 Sepia
		RFT 1 Sepia
		Mechanical Sidewall coring Tool 1 Sepia

Signed By: [signature] Date: 11-10-92

Provided To: AREA Office
(Section)

[ ] a. Borrowed Data Date Borrowed Data Returned: _____

The undersigned accepts responsibility for the security of the proprietary data listed above until it is returned to the District Office, and agrees to abide by the restrictions on proprietary data storage and use. The material must be kept in a Security Area when not in active use. The borrower may not duplicate, divulge, or transmit these data to another office without the prior approval of the District Supervisor.

[X] b. Transmitted Data to OFO Vault

Please acknowledge receipt by signing below and retaining the original copy of this form for your records.

Signature: Tina L Boston Date: 11-10-92

MINERALS MANAGEMENT SERVICE
ALASKA OCS REGION

District Office

DATA TRANSMITTAL FORM

Lease	Well	Description
[redacted]	1	Daily Reports 8A
0747	1	Daily Reports 8A
1092	1	Daily Reports 8A
0267	1	Daily Reports 8A
0996	1	Daily Reports 8A

Signed By: D L R Chorgansky Date: 11-10-92

Provided To: Area Office Vault
(Section)

☐ a. Borrowed Data Date Borrowed Data Returned: _____

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☒ b. Transmitted Data to OFO Vault

Please acknowledge receipt by signing below and retaining the original copy of this form for your records.

Signature: Tina A Boston Date: 11-10-92

Regs 10/27

UNITED STATES GOVERNMENT
MEMORANDUM

OCT 2 8 1992

To: Supervisor, Rules, Orders and Standards Section
Supervisor, District Office

Through: Regional Supervisor, Field Operations *Orig. Sgd. by Rodney A. Smith*

From: Supervisor, Operations Review and Approval Section (ORIG. SGD.) JEFF WALKER

Subject: Kuvlum Debriefing

The Operations Review and Approval Section has been asked to coordinate a review of the 1992 activities at the Kuvlum location. The objective, as stated in an October 21, 1992, memorandum from the Regional Supervisor, Field Operations (RSFO), is to "better understand the 1992 activities, identify and answer problems or questions [with respect to the activities], prepare for next year's activities, and make adjustments to procedures or policies as needed." Attached you will find a copy of the RSFO's memorandum which includes some possible agenda items.

We have scheduled a 10:00 a.m. strategy meeting for Friday, November 6, 1992, in the Field Operations conference room to discuss the agenda and how we should approach such a review. We also intend to discuss when the meeting(s) should be conducted. We would appreciate the attendance of staff involved with any of the agenda items mentioned in the attached memorandum.

Activities at the ARCO Kuvlum Prospect are expected to continue next year to delineate the discovery announced earlier this month. It is important that we understand how our approval process did or did not work, how it could be improved, and what issues need further review prior to processing permits for ARCO or others in 1993. We would also like to focus on how effective all components of our inspection program (predrill, drilling, special requirements, and National Pollutant Discharge Elimination System) were at the Kuvlum well. Staff from your respective sections will be asked to research and discuss backup information once an agreed upon agenda has been developed and the review meeting(s) scheduled. It is our hope that these meetings will be interactive and educational with open discussions by all those present.

Although the intent was to focus on the 1992 Kuvlum operations, there may be opportunity to expand our discussions to include other past operations which are relevant to the objective of better understanding our regulatory program and drilling operations in the Arctic. Keep this in mind as we prepare for the review.

Attachment

bcc: OCS-Y 0866 ~~36~~ 64 (area/dist)
Chrons (area/dist/ora/cc)

JRegg:jbr:pmw:10/27/92
F:\users\ora\debrief.mem

OCT 2 1 1992

UNITED STATES GOVERNMENT
MEMORANDUM

To: Supervisor, ORA Section

From: Regional Supervisor, Field Operations *Orig. Sgd. by Rodney A. Smith*

Subject: Kuvlum Debriefing

I think we could benefit from a thorough review of various aspects of Kuvlum activities and our regulatory process. Hopefully, we will be able to sharpen our efforts for future Beaufort Sea drilling and use of the Kulluk in this area.

For starters, I would like the ORA Section to coordinate a review process with participation by the District Office and ROS Section which could be a Field Operations' workshop or series or meetings on various subjects. Objectives would be to better understand the 1992 activities, identify and answer problems or questions, prepare for next year's activities, and make adjustments to procedures or policies as needed. We might keep an eye on simplifying or reducing requirements on lessees or reducing work for MMS, if possible. Some items that come to mind are:

1. 1992 Experiences
   a. Summary of Kuvlum - Downtime due to ice.
   b. Ice Conditions, Monitoring and Reporting
   c. COCP - Problems, Questions, Improvements
   d. Permitting and Reporting
   e. Oil Spill Contingency Plans and Drills
   f. Bowhead Whale Monitoring/Reporting

2. Inspection Procedures and Results

3. Other Topics
   a. Anchor Tests/Monitoring
   b. Near Misses
   c. End of Season
   d. NPDES Permits
   e. Kick Tolerance Policy
   f. Air Quality
   g. Gloryholes

4. Kuvlum Exploration Plans and CZM Consistency

I've already asked the ORA Section to review and report on the types and status of potential structures that might be used in the Beaufort Sea in 100-200 feet of water. The ORA Section is also conducting a preliminary geological study of Kuvlum. I am also asking the ORA Section to review ice information at Kuvlum site on a year-round basis.

Please contact the ROS Section and District Office on items for review and procedures and let me know what the format and plans are for a review since I would like to conduct the review so that we can complete it and associated work before we need it for next season. Also, I would like to participate as much as possible.

cc: Deputy Regional Supervisor,
Field Operations
Supervisor, ROS Section
Supervisor, District Office

bcc: ~~ENV~~
Chrons (CC/Dist/area)

F:\USERS\OFO\SMITH\elw:10-20-92\KUV-BRF.MEM

United States Department of the Interior

MINERALS MANAGEMENT SERVICE
Alaska Outer Continental Shelf Region
949 E. 36th Avenue, Room 603
Anchorage, Alaska 99508-4302

IN REPLY REFER TO:

TAKE PRIDE IN AMERICA

JWR 10/22
Regg 10/22
walk 10/22

OCT 26 1992

Mr. Dan Robison
Alaska Operations Office
Environmental Protection Agency
222 W. Seventh Avenue, Box 19
Anchorage, Alaska 99513-7588

Dear Mr. Robison:

Enclosed are copies of the completed pilot National Pollutant Discharge Elimination System (NPDES) compliance inspection forms which document the most recent Minerals Management Service (MMS) inspections conducted at the ARCO Alaska, Inc., Kuvlum Prospect OCS-Y 0866 No. 1 well in the Sale 87 area of the Beaufort Sea. The dates of the NPDES inspections are from September 16, 1992, to October 14, 1992, inclusive. Please note that each pilot program NPDES inspection form documents 7 days of inspections completed by the MMS. (The well was plugged and abandoned on October 14, and the drilling unit was moved to Canada for the winter.)

If you have any questions or require any additional information, please contact Jim Regg or Jeff Walker of my staff at 271-6188.

Sincerely,
Orig. Sgd. by
Rodney A. Smith

Regional Supervisor
Field Operations

4 Enclosures

bcc: OCS-Y 0866 No. 1, 6.A. (area/dist)
(w/o enclosures)
ACE 7-6 (area/dist) (w/o enclosures)
Chrons (area/dist/ora/cc/rd)

JRegg:JNauman:pmw:10/20/92
F:\users\ora\npdes.ltr

OCT 2 1 1992

UNITED STATES GOVERNMENT
MEMORANDUM

To: Supervisor, ORA Section

From: Regional Supervisor, Field Operations *Orig. Sgd. by Rodney A. Smith*

Subject: Kuvlum Debriefing

I think we could benefit from a thorough review of various aspects of Kuvlum activities and our regulatory process. Hopefully, we will be able to sharpen our efforts for future Beaufort Sea drilling and use of the Kulluk in this area.

For starters, I would like the ORA Section to coordinate a review process with participation by the District Office and ROS Section which could be a Field Operations' workshop or series or meetings on various subjects. Objectives would be to better understand the 1992 activities, identify and answer problems or questions, prepare for next year's activities, and make adjustments to procedures or policies as needed. We might keep an eye on simplifying or reducing requirements on lessees or reducing work for MMS, if possible. Some items that come to mind are:

1. 1992 Experiences
   a. Summary of Kuvlum - Downtime due to ice.
   b. Ice Conditions, Monitoring and Reporting
   c. COCP - Problems, Questions, Improvements
   d. Permitting and Reporting
   e. Oil Spill Contingency Plans and Drills
   f. Bowhead Whale Monitoring/Reporting

2. Inspection Procedures and Results

3. Other Topics
   a. Anchor Tests/Monitoring
   b. Near Misses
   c. End of Season
   d. NPDES Permits
   e. Kick Tolerance Policy
   f. Air Quality
   g. Gloryholes

4. Kuvlum Exploration Plans and CZM Consistency

I've already asked the ORA Section to review and report on the types and status of potential structures that might be used in the Beaufort Sea in 100-200 feet of water. The ORA Section is also conducting a preliminary geological study of Kuvlum. I am also asking the ORA Section to review ice information at Kuvlum site on a year-round basis.

Please contact the ROS Section and District Office on items for review and procedures and let me know what the format and plans are for a review since I would like to conduct the review so that we can complete it and associated work before we need it for next season. Also, I would like to participate as much as possible.

cc: Deputy Regional Supervisor,
Field Operations
Supervisor, ROS Section
Supervisor, District Office

bcc ~~ENV~~ 0860-6A
Chrons (CC/Dist/area)

F:\USERS\OFO\SMITH\elw:10-20-92\KUV-BRF.MEM

MINERALS MANAGEMENT SERVICE
ALASKA OCS REGION

District Office

DATA TRANSMITTAL FORM

Lease	Well	Description
[redacted]	1	DST #1
		DST #2
		Run 2 Dipole Sonic

Signed By: [signature] Date: 10-16-92

Provided To: AREA office
(Section)

☐ a. Borrowed Data Date Borrowed Data Returned: _____

The undersigned accepts responsibility for the security of the proprietary data listed above until it is returned to the District Office, and agrees to abide by the restrictions on proprietary data storage and use. The material must be kept in a Security Area when not in active use. The borrower may not duplicate, divulge, or transmit these data to another office without the prior approval of the District Supervisor.

☑ b. Transmitted Data to OFO Vault

Please acknowledge receipt by signing below and retaining the original copy of this form for your records.

Signature: Linda Boston Date: 10-16-92

Thursday, Oct 15, 1992

ARCO Alaska, Inc.
Media Communications
Post Office Box 100360
Anchorage, Alaska 99510-0360

news

R. 28.10.92/0905

for release Immediately

For further information contact:
Susan Reed at (907) 265-6847

ARCO ANNOUNCES OIL DISCOVERY IN ALASKA'S BEAUFORT SEA

ANCHORAGE, AK., OCTOBER 14, 1992-- ARCO Alaska, Inc. and its partners have discovered oil at the ARCO Kuvlum No. 1 exploratory well, in the eastern Beaufort Sea 60 miles east of Prudhoe Bay and 16 miles offshore. The well is on federal leased acreage (OCS-Y-866 # 1) in 110 feet of water.

In testing, the well flowed 3,400 barrels of oil per day at a wellhead pressure of 300 pounds per square inch. Average gas-oil ratio during the test was 600 SCF of natural gas per barrel. The oil is 34 degree API gravity. Other details of the test and pay interval were not disclosed.

The discovery well is located on the 35,000-acre Kuvlum prospect joint participation area. ARCO holds 50.42 percent working interest in the well. Other working interest owners are Union Texas Petroleum Alaska Corporation, 20 percent; Phillips Petroleum Company, 12.58 percent; TOTAL MINATOME CORPORATION, 12.5 percent; Murphy Oil USA, Inc., 3.94 percent; Mobil Exploration & Production U.S. Inc., 0.56 percent.

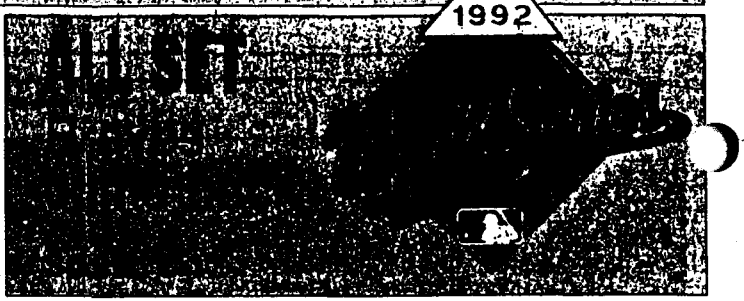
Drilling began in mid August using the Kulluk, a floating drill rig designed for use in Arctic waters. It is under lease from BeauDril, Ltd., managed by Global Marine of Houston, Texas. ARCO and its partners are formulating plans for followup drilling to delineate the size of the discovery and to determine whether it is commercial.

###

LOST HORSES FOUND: Thinner, but safe and sound, Metro, B-1

MANIACS
Thinking band's subtle shift
Impulse, G-1

A GOOD HAND
That's only part of playing poker
Lifestyles, F-1



Anchorage Daily News

VOL. XLVII, NO. 290 132 PAGES ☆ ANCHORAGE, ALASKA, THURSDAY, OCTOBER 15, 1992 PRICE 25 CENTS

Arco makes Arctic strike

Offshore field could mean jobs, but royalties go to feds

By KIM FARARO
and HAL BERNTON
Daily News business reporters

Arco Alaska Inc. has discovered oil in the Beaufort Sea, but it won't be clear for at least a year if the find is big enough to develop, the company announced Wednesday.

The discovery well, called the Kuvlum No. 1, is 60 miles east of the giant Prudhoe Bay Field and 16 miles offshore, just north of the Arctic National Wildlife Refuge.

Despite the many unknowns about the find's potential, the discovery thrilled Arco executives, who have staked much of their future on the state even as other companies abandon Alaska to explore overseas.

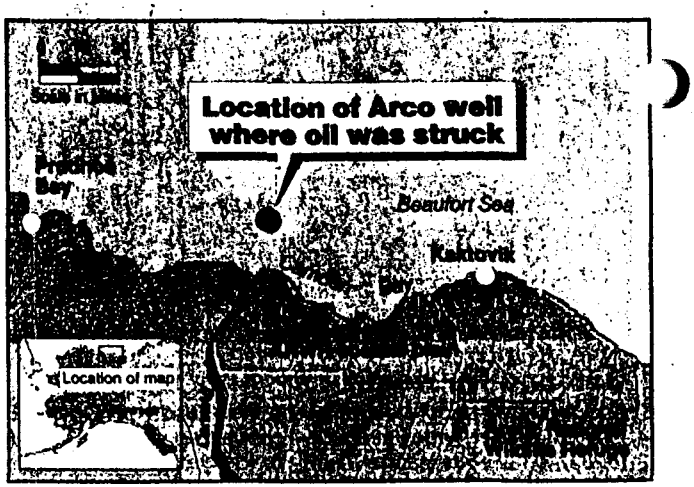
"Companies have been leaving the state and cutting back their exploration in Alaska, but this well confirms Arco's thinking that Alaska is a very prospective place to drill," said James M. Davis, Arco's senior vice president in charge of exploration.

State officials were more restrained because the find is in federal waters, which means the state would receive very little of the hundreds of millions of dollars in government revenues a field could generate.

The state has been hoping for a bailout from its expected fiscal crisis as oil production — and the state revenue it generates — declines. But the state's chief oil economist, Chuck Logsdon, said the Kuvlum prospect won't save Alaska.

Logsdon and others said the good news is that devel-

Please see Back Page, OIL



RON ENGSTROM / Anchorage Daily News

OIL STRIKE: Arco reports find in the Beaufort Sea

Continued from Page A-1

opment of a field would be a multibillion-dollar project, one of the largest in the state in a decade, and that would mean jobs for the oil patch's shrinking work force. Developing a field also could encourage other oil companies to bring smaller fields in the Beaufort Sea on line if they could hook up to a pipeline to bring the Kuvlum crude to Prudhoe Bay.

Arco said Wednesday that it expects to drill one or two wells next year to determine the size of the find. The company says the field would need to hold more than a billion barrels of recoverable oil to make it worth the expense of producing crude from such a remote area.

A billion-barrel field would be huge and would be the third largest in Alaska, following Prudhoe Bay — which is expected to produce about 12 billion barrels of oil — and Kuparuk — which is likely to produce about 2 billion barrels.

Arco owns 50.42 percent of the oil it expects to find at Kuvlum. The rest is owned by five other companies, which would have to agree to development.

On Wednesday, Arco's two major partners in the venture, Union Texas Petroleum and Phillips Petroleum Co., said they shared Arco's enthusiasm for the find and supported additional drilling.

"It looks promising and we definitely plan to be with them," said George Minter, a spokesman for Phillips Petroleum Co. Phillips owns 12.58 percent of the potential field.

The other owners are Total Minatome Corp., Murphy Oil USA Inc. and Mobil Exploration & Production U.S. Inc.

> *"That 3,400 barrels is a good, healthy rate. Now, the question is whether there's enough of it, and that's the big if."*
>
> — David Johnston, oil and gas conservation commission

Independent oil analysts and state officials say the initial vital signs of the $45 million Kuvlum well are encouraging, but say it will impossible to know the size of the find until the owners do more drilling.

Arco says the well flowed at 3,400 barrels of oil per day, which analysts call "respectable."

"That 3,400 barrels is a good, healthy rate," said David Johnston, head of the state's oil and gas conservation commission. "Now, the question is whether there's enough of it, and that's the big if."

Well tests also showed the crude is of high quality, which means it contains substantial amounts of the most valued fuels, including gasoline. The tests showed the quality was higher than Prudhoe Bay crude.

No matter how good the field, analysts say it would be enormously expensive to develop because it's in a remote, offshore location in 110 feet of water and in an area the polar ice pack passes through. To get the oil to the trans-Alaska pipeline, oil companies would probably have to run a pipeline 16 miles to shore, then build a second pipeline to carry the oil 60 miles west to Prudhoe Bay. From there, the oil could be shipped through the trans-Alaska pipeline south to Valdez.

The underwater pipeline would be a particularly tricky engineering feat, said Joseph Riva, a geologist who tracks offshore exploration for the U.S. Library of Congress. He said the pipeline would run under the pack ice and have to be buried in the sea bottom to escape gouging by huge icebergs.

"I don't know, offhand, of any place where they (the oil industry) have gone under the pack ice," Riva said.

Because of Kuvlum's location and the technical difficulties of producing oil there, any development project would be closely scrutinized by both environmentalists and North Slope Natives. Both groups fear the effect that development would have on bowhead whales and other creatures of the Arctic that could be harmed by spills or scared away by the activity surrounding oil production.

"This would be an unprecedented attempt at bringing oil to market," said Randall Weiner, executive director of Trustees for Alaska, an environmental law firm. "If this proves to be a large oil field, there will be a lot of pressure to move ahead, in which case we will all need to make sure that the environment is protected along with everything else."

Marx Sims, mayor of the North Slope village of Kaktovik, said his people would rather see onshore oil development within the Arctic National Wildlife Refuge.

"We're always worried about offshore spills and the technology to clean them up," Sims said.

The Kuvlum strike is just north of the ANWR coastal plain, considered by oil industry geologists to be the best onshore prospecting spot in North America.

But environmentalists — who want to maintain the refuge as pristine wilderness — have persuaded Congress to keep the refuge off limits to exploration. And this new strike isn't likely to change that, said Becky Gay, who headed a state lobbying campaign to try to open the refuge.

"From a geologist's point of view, (the Kuvlum find is) exciting," Gay said. "But from a political point, it's hard for me to see how this would make any difference AT all in opening ANWR."

Arco has said that if it finds enough oil to produce from Kuvlum, the field likely wouldn't be brought on line until the year 2000. That would allow time for engineering studies and time to construct the needed pipelines.

Should Kuvlum prove a big success, it would vindicate Arco and its continued faith in Alaska's oil future and in the Kuvlum prospect itself.

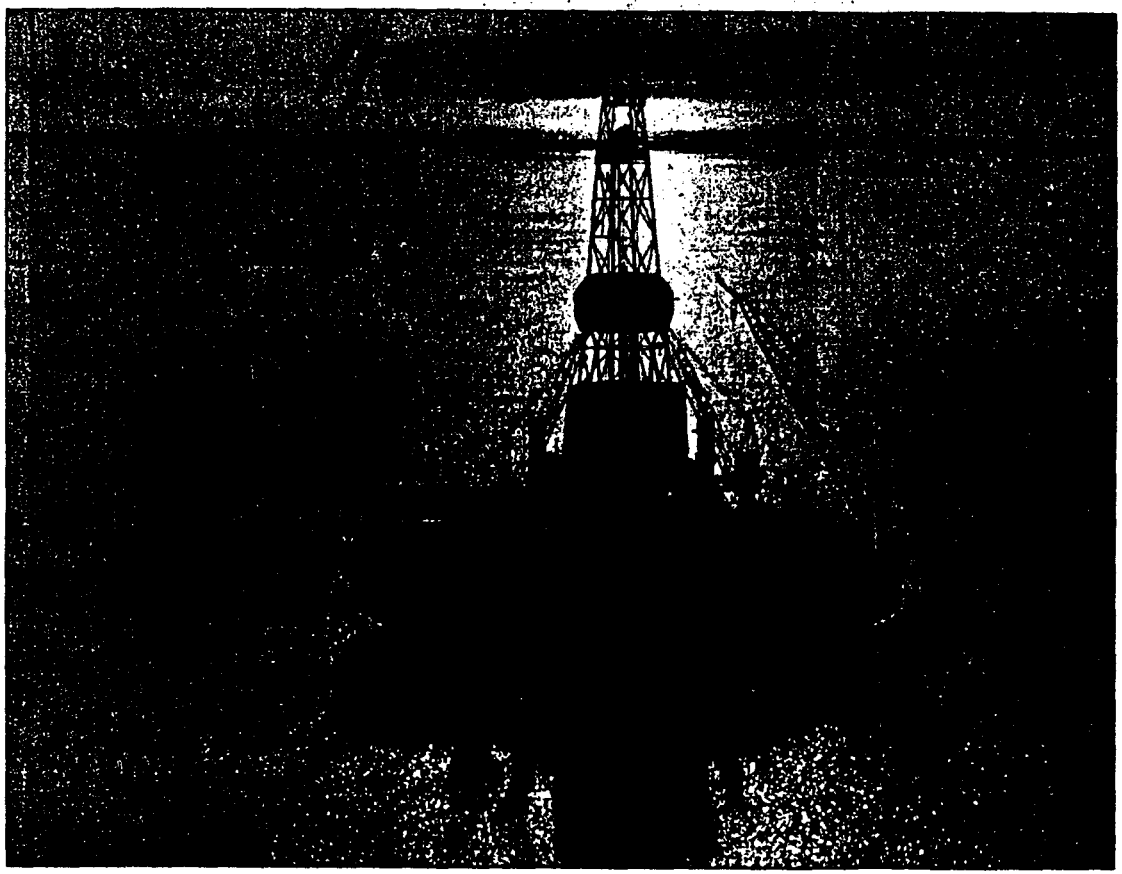
Other oil companies, including British Petroleum, had considered drilling at Kuvlum but backed off. BP Exploration (Alaska) Inc. executives said they decided against drilling because of the cost and the risk that any find wouldn't justify the expense.

It would not be the first time that Arco pressed on in Alaska when other companies gave up. It discovered Prudhoe Bay after other companies tried and left.

BUSINESS

FRIDAY, October 16, 1992 ANCHORAGE DAILY NEWS SECTION C

Experts hopeful on oil find



Arco Alaska, Inc. photo

Arco Alaska, Inc. and its partners have discovered oil at the Arco Kuvlum No. 1 exploratory well, in the eastern Beaufort Sea 60 miles east of Prudhoe Bay and 16 miles offshore.

Arco exploration said encourag

By KIM FARARO
Daily News business reporter

Oil industry analysts and insiders Thursday reacted to the news of Arco's strike in the Beaufort Sea with guarded optimism.

The analysts said they are encouraged that Arco is planning to continue exploring the area because that suggests the company still believes it is likely to find a large field.

But they and insiders stressed that it will be impossible to know whether the company is right until more wells are drilled next year.

"We're so used to this process that we don't go leaping about," said BP ploration (Alaska) Inc. Pr dent Julian Darley. "I don't think you'll find the industry pros counting their chickens before they hatch."

And Paul Ting, an analyst at Oppenheimer & Co. in New York, echoed: "People don't get really excited until you delineate the field."

As a reflection of that sentiment, the company's stock rose a bit Thursday — gaining 1 5/8 to close at

FIND: Experts hopeful on strike

Continued from Page C-1

118 5/8 — but did not take off.

Arco announced the strike Wednesday from its Kuvlum well, 16 miles offshore and 60 miles east of the giant Prudhoe Bay field. Arco already has said that it would only develop a field at Kuvlum if it finds more than 1 billion barrels of recoverable oil, a huge field.

The company would need that size find because the site is so remote and the area so physically threatening, pushing up the cost of production.

Arco and its five oil-company partners would need to pioneer technology to ensure that it could produce and transport crude safely among the giant ice floes that push through the area and are capable of crushing ordinary production equipment.

Arco has said that it would build a subsea pipeline to carry the oil ashore, and then another pipeline to bring the oil to Prudhoe Bay. From there, the crude could be pumped into the trans-Alaska pipeline for the trip south to tankers in Valdez.

The demands of producing from the site already have chased away other oil companies, including BP.

BP had gotten permits to drill a well and had planned to do so until executives decided this year that the company could better use its money elsewhere.

Tom Williams, a spokesman for the company, said BP scientists thought that Kuvlum could hold a very large field, but executives felt that — even if there was a big field — it would cost too much to develop the needed technology.

Williams said the company might have been willing to go ahead anyway, but it has no holdings in the far-offshore Arctic and would be unable to carry over that technology to other fields.

Darley said Thursday that he stands by BP's decision. "To find oil is one thing. To be able to develop a field and make a bit of money out of it is another matter."

He added that he would be glad if Arco had a big find because it would mean more oil for the trans-Alaska pipeline and more companies to share in its cost. Flow through the line is expected to drop precipitously in the coming years.

BP also would be entitled to royalties from production at Kuvlum because it ceded its share in acreage there to Arco.

The big question now, those in the industry say, is whether Kuvlum is full of oil or just contains a rich pocket of crude around the first well. Arco said Wednesday that it expects it will drill one or two wells next year with its partners to answer that question.

The partners will need to wait until the summer because that is when the ice floes move further offshore.

State officials also have been mainly cautious in their reactions to Arco's find because Kuvlum is in federal waters and the state would be expected to share in few of its riches.

The state could collect corporate taxes, for instance, but it would miss out on royalties and severance tax, the two oil sources that provide the bulk of the state's revenues.

Kudos to Arco for its oil find

Let's give a hand to Arco Alaska Inc. whose perseverance in drilling exploratory wells, even more than folks outside the oil patch may realize, paid off in its Kuvlum oil discovery in the Beaufort Sea, announced last Wednesday.

TIM BRADNER

Kuvlum was very nearly a miss. Different companies tried to put the project together twice before. Both times the deals fell apart, with partners nervous about high costs and risk. Third time was a charm.

It's really good news for Alaska's oil industry, which needs a lift right now. The industry is in a real funk, with Prudhoe declining, its operators cutting costs, longtime oil-field contractors shutting down, and major oil compa-

Please see Page E-4, BRADNER

BRADNER: Arco deserves pat on back

Continued from Page E-1

nies pulling out of Alaska and heading for places like Russia. Kuvlum is a big boost for the spirit.

It may be only that. Arco and partners need another year, maybe more, to drill confirmation wells into different parts of the geologic structure to get enough information to make reliable estimates of reserves.

If Kuvlum has a billion barrels or more of recoverable reserves, a threshold for which it must rank as one of the largest oil discoveries in North America, it then faces truly formidable technical and economic problems.

Building a permanent gravel or combination steel and concrete production structure in a hundred feet of water strong enough to withstand the force of the moving winter ice pack, with occasional large, hard multiyear ice floes, will be very costly and difficult. Kuvlum must then pay for a 16-mile subsea pipeline to shore, and a 60-mile pipeline to the trans-Alaska pipeline entry point at Prudhoe Bay.

Then there are the whales. As luck would have it, Kuvlum is smack in the fall migration path of bowhead whales. That means the local Inupiat people, who can influence how things are done even in federal waters, will be very concerned.

But the positive side of this is that it confirms there may be a lot of oil yet to be discovered around Alaska. If Kuvlum is commercial and can support the economics of a pipeline to Prudhoe, it then might make several other discoveries in the vicinity economic to develop.

Conoco, for instance, has hit oil east of Prudhoe Bay, in its Badami well. Shell discovered oil at Tern Island, an offshore barrier island. Unocal found oil at its Hammerhead offshore well west of where Kuvlum was drilled. Exxon made a big gas-condensate discovery at Point Thompson, on the coast south of Kuvlum. Many of these discoveries are on state land, which means Kuvlum could, indirectly, create more tax and royalty revenue for the state.

Collectively, these other fields won't support a pipeline. But if Kuvlum is big enough, it can become like an anchor store in a shopping mall, helping the economics of the others.

Similarly, Prudhoe Bay paid for the trans-Alaska pipeline, which then made viable other fields in the area: Kuparuk River, Endicott, Lisburne, Milne Point and now the new Point McIntyre field.

There's one other important thing Kuvlum could do: It might supply that critical quantity of oil needed to keep the trans-Alaska pipeline operating in the early years of the next century.

That keeps the pipeline available for other discoverles, even small ones, that will put tax and royalty money into the state treasury, even if Kuvlum, which is on federal leases, will not.

How Kuvlum almost didn't get drilled is an instructive story that illustrates a key problem the industry faces.

Ownerships in offshore, as well a lot of onshore, leases are split among many companies. Because costs are so high, companies often bid for leases in groups, to share risk. That makes for fragmented, complex lease ownerships.

It also puts a lot of cooks in the kitchen, because geologists and geophysicists will have different interpretations of the same geological and seismic data.

All this is exacerbated when exploration budgets are tight and companies look that much more critically at proposed new ventures.

It may be too late to do anything to help this with existing leases, but Arco has suggested an approach the state could use in unexplored areas, like interior Alaska, which involves leasing of much larger amounts of acreage to a company willing to commit to an exploration program.

The state legislature will consider this, and there are pros and cons to it. But anything that could simplify the putting together of deals and make exploration more efficient, should be looked at.

☐ Tim Bradner writes for an Alaska economic reporting service. His private clients include petroleum companies. His opinion column appears every fourth Sunday.

MINERALS MANAGEMENT SERVICE
ALASKA OCS REGION

District Office

DATA TRANSMITTAL FORM

Lease	Well	Description
0866	1	Run 1 Lis Type + Verification

Signed By: [signature] Date: OCT 6 1992

Provided To: AREA Office
(Section)

☐ a. Borrowed Data Date Borrowed Data Returned: _____

The undersigned accepts responsibility for the security of the proprietary data listed above until it is returned to the District Office, and agrees to abide by the restrictions on proprietary data storage and use. The material must be kept in a Security Area when not in active use. The borrower may not duplicate, divulge, or transmit these data to another office without the prior approval of the District Supervisor.

☒ b. Transmitted Data to OFO Vault

Please acknowledge receipt by signing below and retaining the original copy of this form for your records.

Signature: Tina A Boston Date: 10-7-92

STATE OF ALASKA

DEPT. OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

WALTER J. HICKEL, GOVERNOR

P.O. BOX 107034
ANCHORAGE, ALASKA 99510-7034
PHONE: (907) 762-2553

September 28, 1992

RECEIVED
7:30 AM
OCT 9 1992

REGIONAL DIRECTOR, ALASKA OCS
Minerals Management Service
ANCHORAGE, ALASKA

Mr. Al Powers
Regional Manager
Alaska OCS Region
Minerals Management Service
949 E. 36th Ave, Room 110
Anchorage, AK 99508-4302

Dear Mr. Powers:

Attached is a request for access to proprietary data associated with ARCO's OCS Y-0866 (Kuvlum) well as provided for in Section 26(d) of the OCS Lands Act. The data will be inspected by the following:

Rich Kornbrath
Don Krouskop
Mark Myers
Tom Smith

Sincerely,

James J. Hansen
Chief Petroleum Geophysicist

Enclosure 5

Request for Access to Privileged or Proprietary Geological and Geophysical Data or Information

To be completed by authorized State official.

In accordance with the authority vested in me in an authorization under ☐ Part II or ☒ Part III (check one) of the "Access to Privileged or Proprietary Geological and Geophysical Data or Information" Agreement signed 7/25/91 (date) by HAROLD C. HEINZE (Governor or Authorized Representative) of the State of ALASKA, I request to ☒ inspect ☐ receive (check one) the following privileged or proprietary geological and geophysical data or information (please describe the information to be accessed in as much detail as possible):

ARCO 1 OCS Y-0868 KUVLUM

ALL AVAILABLE LOGS (INCLUDING GAMMA RAY-INDUCTION, SONIC, NEUTRON DENSITY, DIPMETER-FMS/FMI, MWD LOGS, MUD LOG, RFT); ALL AVAILABLE TEST DATA & FLUID ANALYSIS; DIRECTIONAL SURVEYS, SIDEWALL OR OTHER CORE DATA; AFE DATA (VELEO/PALY); GEOCHEM DATA; WELL HISTORY; DRILLING HISTORY, VSP, check shot survey, Structure map, Seismic data Near well

In requesting access to the data or information described above, I realize that access is subject to the conditions outlined in the Agreement between the United States and the State of ALASKA, dated 8/12/83. I (1) agree to provide for secure storage and

transmittal of these proprietary data and information derived therefrom according to the same or more secure standards than are presently employed by the Minerals Management Service (an outline of these standards is available upon request), (2) agree to return the proprietary data and all copies, tracings, or other reproductions thereof to the Regional Director in accordance with the Agreement, (3) agree to pay for the reproduction costs for the information transmitted to the State, and (4) am aware of the provisions for unauthorized disclosure in section 24(c)(4) of the Outer Continental Shelf Lands Act (i.e., a fine of not more than $100,000 or imprisonment for not more than 10 years, or both). Responsibility for meeting the conditions relating to unauthorized disclosure of privileged or proprietary information is hereby accepted.

Signed:

[signature] Authorized State Official

10/8/92 Date

3601 C. ST. Suite 1398, ANCHORAGE, AK 99503
(Address where information is to be sent and maintained)

State of Alaska

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

DIRECTOR'S OFFICE
3601 C Street, Suite 1380
Anchorage, Alaska 99503

(907)762-2547 *phone*
(907)562-3852 *fax*

FAX TRANSMITTAL

DELIVER TO/HOLD FOR PICKUP: Al Powers

FAX NUMBER: 271-6805

DATE: 10/8/92 TIME: 3:30

TOTAL PAGES *(including transmittal sheet)*: 4

RECEIVED
7:30 AM
OCT 9 1992
REGIONAL DIRECTOR, ALASKA OCS
Minerals Management Service
ANCHORAGE, ALASKA

FROM: Tom Smith

COMMENTS: We would like to see data sometime
Next week with John Wilson
Call me 762-3189 thanks.

* * *

If you experience any problems receiving fax, please call (907)762-2549 immediately.

MINERALS MANAGEMENT SERVICE
ALASKA OCS REGION

District Office

DATA TRANSMITTAL FORM

Lease	Well	Description
0866	1	~~Blu~~ Sepia copy of the following Logs
		2 3/5" ~~Array~~ Dipole Sonic
		2 3/5" ~~Array~~ [redacted] Induction ✓
		Formation Micro Imager ✓
		2 3/5" Litho-Density Neutron ✓
		MDT / RFT ✓
		Formation Micro-Scanner ✓

Signed By: [signature] Date: 9-23-92

Provided To: ARCO Office Vault
(Section)

☐ a. Borrowed Data Date Borrowed Data Returned: _____

The undersigned accepts responsibility for the security of the proprietary data listed above until it is returned to the District Office, and agrees to abide by the restrictions on proprietary data storage and use. The material must be kept in a Security Area when not in active use. The borrower may not duplicate, divulge, or transmit these data to another office without the prior approval of the District Supervisor.

☒ b. Transmitted Data to OFO Vault

Please acknowledge receipt by signing below and retaining the original copy of this form for your records.

Signature: Tina D Boston Date: 23-Sep 92

OCT 6 1992

UNITED STATES GOVERNMENT
MEMORANDUM

To: Supervisor, District Office

From: Acting District Engineer

Subject: Sidetrack Sundry Notice for the ARCO Kuvlum Well

I have reviewed the sundry notice and believe it to be in compliance with MMS regulations, ARCO's Kuvlum Exploration Plan and Application for Permit to Drill. I have, however, noted an error in the assignment of the API number for the sidetrack. As per American Petroleum Institute (API) Bulletin D12A, the sidetrack should be assigned a unique sidetrack number. I have attached page 12 of API Bulletin D12A that indicates the appropriate methodology for assigning the API number for the sidetrack.

If you have any questions or require any further information please contact me at extension 6188.

H J. Jeschke

Attachment

bcc: OCS-Y 0866, Sidetrack #1 - Area/District
Chrons Area/District/cc
JJeschke:10-05-92:f:\users\do\sidetrak.mem

United States Department of the Interior

MINERALS MANAGEMENT SERVICE
Alaska Outer Continental Shelf Region
949 E. 36th Avenue, Room 603
Anchorage, Alaska 99508-4302

IN REPLY REFER TO:

OCT 1 1992

Mr. M. B. Winfree
ARCO Alaska, Inc.
P.O. Box 100360
Anchorage, Alaska 99510-0360

Dear Mr. Winfree:

Enclosed is the Sundry Notice (Form MMS-331) dated September 28, 1992, approving your request to install 9-5/8" casing in the Kuvlum Prospect, OCS-Y 0866 #1.

Please call me at (907) 271-6066 if you have any questions.

Sincerely,

Brian F. Schoof
Supervisor, District Office
Field Operations

Enclosure

bcc: OCS-Y 0866 #1 - ~~Area~~/District
Chrons Area/District/CC/RD
BSchoof:10-01-92:nll:arco_casing

United States Department of the Interior

MINERALS MANAGEMENT SERVICE
Alaska Outer Continental Shelf Region
949 E. 36th Avenue, Room 603
Anchorage, Alaska 99508-4302

IN REPLY REFER TO:

SEP 30 1992

Mr. M. B. Winfree
ARCO Alaska, Inc.
P.O. Box 100360
Anchorage, Alaska 99510-0360

Dear Mr. Winfree:

Enclosed is the Sundry Notice (Form MMS-331) approving your request to sidetrack the Kuvlum Prospect as the OCS-Y 0866 #1, Sidetrack #1.

Please call me at (907) 271-6066 if you have any questions.

Sincerely,

Brian F. Schoof
Supervisor, District Office
Field Operations

Enclosure

bcc: OCS-Y 0866 #1 LOA
Area/District
Chrons Area/District/CC/RD
BSchoof:09-30-92:nll:arco_sdtrk

United States Department of the Interior

MINERALS MANAGEMENT SERVICE
Alaska Outer Continental Shelf Region
949 E. 36th Avenue, Room 603
Anchorage, Alaska 99508-4302

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:

SEP 25 1992

Mr. M. B. Winfree
ARCO Alaska, Inc.
P.O. Box 100360
Anchorage, Alaska 99510-0360

Dear Mr. Winfree:

Enclosed is the Sundry Notice (Form MMS-331) for OCS-Y 0866 #1, Kuvlum Prospect, approving your requests to perforate and test.

Please call me at (907) 271-6066 if you should have any questions.

Sincerely,

Brian F. Schoof
Supervisor, District Office
Field Operations

Enclosure

bcc: OCS-Y 0866 #1 - ~~Area~~/District
Chrons Area/District/CC/RD
BSchoof:09-25-92:nll:arcosundry

United States Department of the Interior

MINERALS MANAGEMENT SERVICE
Alaska Outer Continental Shelf Region
949 E. 36th Avenue, Room 603
Anchorage, Alaska 99508-4302

IN REPLY REFER TO:

SEP 23 1992

Mr. Dan Robinson
Alaska Operations Office
Environmental Protection Agency
222 W. Seventh Avenue, Box 19
Anchorage, Alaska 99513-7588

Dear Mr. Robinson:

Enclosed are copies of the completed pilot National Pollutant Discharge Elimination System (NPDES) compliance inspection forms which document the most recent Minerals Management Service (MMS) inspections conducted at the ARCO Alaska, Inc., Kuvlum Prospect OCS-Y 0866, No. 1 well. This office does not have an assigned Alaska NPDES permit number for this well in the Sale 87 area of the Beaufort Sea and assumes your office will make that designation. The dates of the NPDES inspections are from August 11, 1992, to September 16, 1992, inclusive. Please note that each pilot program NPDES inspection form from August 11 through August 26 documents 8 days, and from August 26 through September 16 documents 7 days of inspections completed by the MMS.

If you have any questions or require any additional information, please contact Jim Regg or Jeff Walker of my staff at (907) 271-6188.

Sincerely,
Orig. Sgd. by
Boyd S. Bennett
Acting Regional Supervisor
Field Operations

Enclosure

bcc: OCS-Y 0866 No. 1, 6A (area/dist)
w/o enclosures
ACE 7-6 (area/dist) (w/o enclosures)
Chrons (area/dist/ora/cc/rd)

JRegg:JNauman:pmw:9/17/92
F:\USERS\ORA\NPDES

ARCO Alaska, Inc.
Post Office Box 100360
Anchorage, Alaska 99510-0360
Telephone 907 276 1215

September 15, 1992

Mr. Dave Howekamp
U.S. Environmental Protection Agency
75 Hawthorne Street
Mail Stop A-1
San Francisco, California 94105-3901

Re: ARCO Kuvlum OCS Temporary Permit Application
BACT Issues

Dear Mr. Howekamp:

ARCO Alaska, Inc. (AAI) is preparing a temporary permit application (TPA) for the referenced source to meet the 30-day post promulgation deadline, as specified by the final OCS rule which was published on September 4, 1992. Our TPA will be due October 5, 1992, according to your staff, as the 30-day deadline falls on a Sunday.

I would like to brief you with regard to AAI's efforts to determine and meet EPA's presumed Best Available Control Technology (BACT) measures for the drilling rig Kulluk. According to our notes from the teleconference of August 18, 1992, EPA has recommended that BACT for the Kulluk would be injection timing retard on diesel engines, use of low sulfur fuel, and smokeless flares.

The injection timing on the Kulluk's main engines, the Electro-Motive Diesel units, has been successfully retimed to fire at 4 degrees after top dead center. A representative from Midwest Power Products, the Canadian distributor of the engines, arrived at the Kulluk at 3 am on September 2, 1992. By late Thursday, September 3, the timing had been adjusted on all three EMD engines. Midwest Power estimates that this timing change will reduce NO_x emissions from the engines by 20 percent.

In addition to the injection timing, AAI has further committed to replacement of the existing aftercooler cores with current production "710" series aftercooler cores. This new aftercooler series will provide an additional estimated 10 percent reduction in NO_x emissions from each EMD engine. Due to vendor delays, not all the necessary parts have arrived on site. It is anticipated that the remaining parts will be sent to the Kulluk via direct charter from Edmonton on September 29. Labor to perform the exchange is estimated to be 8 hours per engine once the service technician is on site.

As for diesel fuel sulfur content, the Kulluk and the two Global Marine ice breakers are using low sulfur fuel, which has a sulfur content of 0.031 percent by weight. The same low sulfur fuel will be used throughout the project. The two Canadian Marine (CANMAR) ice breakers left their ports using diesel fuel with a sulfur content of 0.10 percent by weight. The CANMAR vessels will be supplied with the lower sulfur diesel should refueling be required.

Regarding flares, AAI will employ a three-phase primary test separator prior to the flare. This device will separate oil, gas, and water. It has a vane-type mist extractor which functions as a liquids knockout to further separate liquids from the gas stream.

Liquids will not be flared, except under emergency conditions. On-board storage containers will be used to store liquids, should they be generated, to avoid flaring. These liquids will be reinjected back into the hydrocarbon containing formation. Should emergency flaring of liquids occur, the flare burners are equipped with air assist and water injection rings to aid in fuel atomization and combustion.

AAI anticipates that flaring of gas may occur for up to 5 days at a total not to exceed 10 MMscf per day. AAI has leased a flare burner tip from Halliburton Reservoir Services (HRS), which has already been mounted on the existing gas flare pipe. Auto igniters, with a propane pilot, are present to ignite gas once it is sent to flare. HRS anticipates that flared gas will burn smokelessly, but should smoking occur, the well will be immediately shut in and gas flaring will cease. Gas flaring will resume when warranted.

For several reasons, HRS recommends that conventional "smokeless" technology, which uses steam or water assist on the gas flare, not be used on the Kulluk. First, for safety reasons, the Kulluk cannot risk a flame-out on the gas flare which might occur if water or steam injection were to be used. The Kulluk is a confined living space where a gas build up would be an extreme safety hazard. Second, should water or steam injection be used, it is possible that liquid knockout could occur which would be deposited on the ocean and potentially cause a sheen or spill. Such an occurrence would violate other laws and is therefore not a prudent alternative.

It is important to recognize that in flaring applications where water or steam injection is customarily used, the composition of the product stream is known. Injection rates of water or steam can be optimized to fit the product composition. Also, burner tip design can be optimized where the composition is known. In the case of this exploratory operation, the stream composition is unknown. Thus, it is impossible to optimize a smokeless design prior to flowing this well.

Lastly, the precautions AAI is taking to avoid exceeding the state opacity rules in flaring meet those required by the Alaska Department of Environmental Conservation in a permit issued to AAI for drilling the Stinson well in offshore state waters. HRS assures us that if smoking occurs when flaring gas, it will not exceed 20 percent opacity for more than three minutes during any one hour (18 AAC 50.050) or more than 5 minutes during any two consecutive hours (40 CFR 60.18). A certified visible emissions reader will be on the Kulluk during gas flaring. Also, a means of flow control is present to limit fluid flows to no more than the design capacity of the phase separator. Liquids will not be allowed to flow to the flare, unless there is an emergency condition.

With the measures described in this letter, AAI feels it is meeting the presumption of BACT as described by EPA. Reductions in NO_x emissions are estimated to be 30 percent, which is within the range anticipated by your office.

Thank you again for EPA's cooperation on the Kuvlum project. Should you have questions or comments about BACT issues, please contact Randy Poteet, AAI's Sr. Air Sciences Consultant, at (907) 263-4741.

Sincerely,

Mark J. Schindler
Director, Exploration Permits and Compliance

cc: Kelly Fortin, EPA Region IX
Tom Kiernan, EPA Washington D.C.
Raymond Nye, EPA Region X
Rodney Smith, MMS
Leonard Verrelli, Alaska Department of Environmental Conservation

bcc:	G.L. Arnold	ATO 1920
	W.T. Christian	ATO 2096
	J.M. Davis	ATO 2100
	K.R. Dickerson	AP-5005
	R.G. Kratsas	ATO 1976
	M. Lev-On	AP-4173
	T.W. McKay	ATO 1438
	D.R. McKelvey	ATO 1400
	S.B. Porter	ATO 2032
	J.M Posey	ATO 2028
	W.R. Poteet	ATO 1986
	J.L. Russell	WG-1001
	J.M. Short	ATO 1902
	A.K. Sorensen	ATO 2086

United States Department of the Interior

MINERALS MANAGEMENT SERVICE
Alaska Outer Continental Shelf Region
949 E. 36th Avenue, Room 603
Anchorage, Alaska 99508-4302

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:

SEP 3 1992

Mr. M. B. Winfree
ARCO Alaska, Inc.
P.O. Box 100360
Anchorage, Alaska 99510-0360

Dear Mr. Winfree:

Enclosed is the approved Sundry Notice submitted on August 31, 1992, for OCS-Y 0866 #1, Kuvlum Prospect.

If you have any questions, please call me at (907) 271-6066.

Sincerely,

Orig. Sgnd. By Brian Schoof

Brian F. Schoof
Supervisor, District Office
Field Operations

Enclosure

bcc: OCS-Y 0866 #1 - Area/District
Chrons Area/District/CC/RD
BSchoof:09-2-92:nll:arcosn

UNITED STATES GOVERNMENT
MEMORANDUM

AUG 2 5 1992

To: Regional Supervisor, Field Operations

Through: Supervisor, Rules, Orders, and Standards

From: Petroleum Engineer Breitmeier 8/25/92

Subject: Kuvlum Special PINC List and Critical Operations and Curtailment Plan (COCP) Questions

Completion of the Kuvlum Special PINC list has been held up pending receipt from the District Supervisor of information on the COCP. Approval of the Application for Permit to Drill (APD) was made contingent upon satisfactory answers to a number of important questions and needed clarifications on the COCP (see attachment 1). This request was made formally on August 7, 1992. ARCO replied with a fax transmission late on Friday, August 14, 1992 with the rig already on location. Several of the questions were not answered adequately; most notably, a request to supply a complete explanation of ARCO's kick tolerance policy for this well, which forms an integral part of the Kulluk alert system and information as to how they propose to collect information sufficient to calculate hazard time at least to Secure Time + 12 hours (Green Alert Status).

The Acting District Engineer and I have attempted, since receipt of this fax, to obtain this information through the District Supervisor, both by verbal and written request. To date we have still not received adequate information on either of these questions.

On the issue of kick tolerance, ARCO has provided a copy of Beaudril's kick tolerance policy which is, on the whole, acceptable. However, they explicitly state that "these calculations do not in any way, provide a substitute for sound engineering judgement." They do not indicate what this "sound engineering judgement" is based on if not these calculations. They also state that "Any final decision regarding alert levels and the impact of kick tolerance on alert levels will be made by the ARCO and Beaudril supervisors onsite." This, in effect, negates the COCP they have provided us. They claim that Beaudril's policy is flawed because it contains "numerous subjective assumptions." The Acting District Engineer and I have examined this policy in depth and find the few assumptions made both reasonable and not uncommon for any engineering calculation. The only safety factor amounts to less than 0.335 pounds per gallon.

It has further been communicated verbally to me by the District Supervisor that ARCO intends to continue drilling below a zero kick tolerance level. In the opinion of the Field Operations petroleum engineering staff, to do so would be irresponsible and a violation of both 30 CFR 250.50, requiring use of best and safest technology to control the well, and 30 CFR 250.54(a)(6), requiring a "safe margin between the mud weight in use and the equivalent mud weight at the casing shoe as determined in the pressure integrity

test." Furthermore, approval of such a policy by this office would almost certainly constitute negligence and make us liable with the operator for any damages, deaths, or injuries, resulting from a blowout where kick tolerance was allowed to drop below zero.

For Hazard time calculations, ARCO has not demonstrated that they have the means to detect multi-year ice at a radius great enough to allow them pull back into casing, hang off, disconnect, and pull anchors, and still have the necessary 12 hours operating time to be in a green alert. Later in the well the Secure time alone may be more than 18 hours.

According to the APD approval letter, ARCO is not supposed to be drilling until these issues have been resolved. I hope this is the case.

John M. Breitmeier

Attachment

bcc: (OCS-Y 0866 6A
Chrons(ros/cc)
ROS Supervisor
Author

JBreitmeier:finaled:nep:8/25/92
F:\USERS\ROS\BREITMER\KUV.MEM

UNITED STATES GOVERNMENT
MEMORANDUM

AUG 20 1992

To: Supervisor, District Office

From: Acting District Engineer

Subject: Review of Addenda for Kuvlum Application for Permit to Drill (APD)

I have reviewed the additional information ARCO Alaska, Inc. provided resulting from our request in the conditional APD approval letter dated August 7, 1992. The information provided satisfies the conditions outlined in the letter except for our concerns pertaining to Hazard Time, regional ice monitoring, and Kick Tolerance. I recommend that we request ARCO to submit written responses to the following:

1. How often is Hazard Time updated?

2. How far away from the drilling unit will the ice be monitored and what methodology will be utilized at each distance to ensure that the ice is monitored to a distance equal to ice velocity * (Secure Time + 12 hours)?

3. Will ARCO be utilizing Beaudril's system for calculating Kick Tolerance and what factors are included in "sound engineering judgement?"

4. If ARCO decides to utilize the Beaudril Kick Tolerance methodology, will drilling be halted when Kick Tolerance becomes less than or equal to zero?

If you have any questions or require any further information please contact me at extension 6508.

/s/ J. Jeschke
Jerry Jeschke

bcc: OCS-Y 0866 #1 - Area/District
Chrons - Area/District/CC
JJeschke:08-20-92

ARCO Alaska, Inc.
Post Office Box 100360
Anchorage, Alaska 99510-0360
Telephone 907-276-1215

August 14, 1992

FAX date

United States Department of the Interior
Minerals Management Service
Alaska Outer Continental Shelf Region
949 East 36th Avenue, Suite 503
Anchorage, Alaska 99508-4302
(907) 271-6066

Attention: Mr. Brian Schoof
District Office Supervisor

Subject: Kuvlum Prospect
Response to APD Stipulations

Dear Mr. Schoof:

As per you correspondence dated August 7, 1992, the attached document is provided to your office in response to the stipulations applied to the conditionally approved APD for the above referenced project.

Thank you for maintaining the confidential nature of this information.

Any further questions pertaining to this issue should be directed to Tom McKay at 265-6890, or to me at 263-4603.

Yours truly,

ARCO ALASKA, INC.

M.B. Winfree
Area Drilling Engineer
New Ventures Drilling

enclosure

cc: Kuvlum No. 1 Well File
Onsite ARCO Drilling Engineer - Kulluk
T.W. McKay ATO-1438

/

KUVLUM PROSPECT

ARCO Response to MMS APD Stipulations

The following listing of responses corresponds by number to the list of stipulations and conditions outlined by the MMS for conditional approval of the Kuvlum Application for Permit to Drill submitted by ARCO Alaska, Inc.

1) The environmental information required by 30CFR 250.51(c) will be recorded and reported daily as requested. The format will be as per the Kulluk Barge Report. In addition to the standard data, the report indicates the current Alert status and will include comments regarding any changes over the past 24 hours.

2) The Kuvlum wellsite will be H2S contingent, and a complete H2S Contingency Plan has been provided to the MMS for reference.

3) A bowhead whale monitoring has been approved and will be undertaken on the Kuvlum project.

4) An NPDES discharge permit has been obtained from the EPA.

5) With respect to relief well tangibles and supplies, ARCO plans to access these items from onshore sources existing on the North Slope, and the timing to ship these materials to the relief well location has been incorporated into the relief well timing. A complete relief well plan was submitted as an attachment to the APD.

6) Attached is a complete listing of all the oil spill response equipment and supplies which are located on the Alaska Clean Seas spill response barge positioned at West Dock in Prudhoe Bay. ARCO will provide any updates to this list to the MMS as required.

7) The determination of Kick Tolerance (KT) is discussed in detail in the BeauDril Operations Manual for the Kulluk. A summary of this calculation and how the results affect the alert status for the vessel are described in the attachment. It should be noted that the BeauDril methodology for determining kick tolerance generally provides a somewhat conservative result. It should also be noted that in any kick tolerance determination, there are numerous subjective assumptions

which are made and these calculations do not, in any way, provide a substitute for sound engineering judgment. Any final decision regarding alert levels and the impact of kick tolerance on alert levels will be made by the ARCO and BeauDril supervisors onsite, in conjunction with consultations with the ARCO Anchorage office.

8) The Kulluk anchor tensions are not directly used in regard to well suspension decisions. The Environmental Alert system is designed to allow curtailment of downhole operations prior to excessive anchor tensions being experienced. It should be noted, however that the tensions are continuously observed, and are specifically adjusted using the anchor winches after the well has been safely secured. This is done to avoid excessive tensions and allow release with a vessel or the remote acoustic device if required.

The display in Figure 13 of the COCP is taken directly from the Performance Monitoring system in the Kulluk control room. The circles represent 40%, 50%, and 80% values of the anchor wire breaking strength. The mooring system is managed such that the 50% value is not exceeded for a continuous period. The pre-tension value is tabulated at the bottom of the display.

9) A revised version of the table depicting the Kulluk Alert Status System from the COCP (Table 27.8.2) has been attached to this correspondence.

10) The Kulluk Alert system does not quantify a large array of environmental and vessel criteria to determine the various levels. This is due in part to the numerous combinations that limit different types of operations. An example of the limiting vessel criteria for various operations is attached.

The Alert system is designed as a guide for safely curtailing operations prior to the arrival of an environmental hazard. The skill and experience of the on site supervisory staff is the key to interpreting the environmental forecast, current conditions and effects on the vessel that will be different for each event.

Additionally the Kulluk system is somewhat unique in that the support ice breaking vessels may reduce or eliminate impact of an ice hazard through ice management. An overview of this is presented in attachment II of the Kuvlum COCP. This provides an added dimension in regard to setting alert levels.

Finally it should be noted that the cornerstone of the Environmental Alert system is the calculation of Hazard and Secure times

(HT, ST). The various environmental and vessel performance factors are incorporated into this process providing a clear and simple decision making tool for setting Alert levels and the corresponding action.

11) Ice surveillance is conducted on a local and regional level. The local systems involve the use of visual sightings from the rig, vessels and helicopters as required plus onboard radar observations. For regional monitoring, numerous systems are in place from daily weather forecasts through to dedicated airborne radar if deemed necessary. A summary of the various components is described in the attached table.

The well has been scheduled to be drilled during the most favorable part of the season such that any major ice intrusions will be very limited, however, contingency exists to obtain in-depth ice information if required.

KUVLUM PROSPECT

KICK TOLERANCE DETERMINATION & ALERT STATUS IMPACT

A series a straightforward calculations are conducted to determine the numerical value of kick tolerance for a floating drilling operation. For the Beaudril Kulluk, the following procedure is executed to determine kick tolerance. Since the Kulluk is a Canadian vessel, all units are expressed using the metric system. For Kuvlum, all calculations and measurements must be expressed in English units.

A. Definition of Variables

Variable	Symbol	English Units	Metric Units
Kick tolerance	KT	ppg	kg/m3
Mud weight	MW	ppg	kg/m3
Applied surface pressure	ASP	psi	kPa
Pressure integrity test*	PIT	N/A	N/A
Equivalent mud weight	EMW	ppg	kg/m3
Actual mud weight in use	AMW	ppg	kg/m3
Depth**	D	feet	meters
0.052 constant	0.052	psi/ppg-ft	N/A
Safety factor***	SF	ppg	kg/m3
Equivalent circulating density	ECD	ppg	kg/m3
Fluid influx volume (pit gain)	Vi	bbls	m3
Fluid influx length (or height)	Li	feet	meters
Hole diameter	DH	inches	mm
Drill collar diameter	DC	inches	mm
Drill pipe diameter	DP	inches	mm
Surge gradient	SG	ppg	kg/m3
Yield point of mud	YP	lbs/100 ft^2	Pa

Trip margin	TM	ppg	kg/m3
Riser margin	RM	ppg	kg/m3
Water depth to wellhead	DW	feet	meters
Mean sea level	MSL	feet	meters
Rotary table elevation (RKB)	RTE	feet	meters
Air gap from MSL to RTE	DA	feet	meters
Allowance factor	A	ppg	kg/m3
Depth of PIT (or LOT)	DPIT	feet	meters
Reduction in hydrostatic	RH	psi	kPa
Total depth of well at time	TD	feet	meters

Note: m3 = cubic meters
mm = millimeters
meters will be abbreviated "m"
^2 indicates squared value

* May also be referred to as leakoff test (LOT)
** For Kuvlum, all depths are TVD since the well is vertical
*** Safety factor can also be expressed in units of pressure (psi or kPa)

B. Procedure for Calculating Kick Tolerance

1) *Calculate the Safety Factor (SF)*

The Safety Factor (SF) in this procedure accounts for inaccuracies in data obtained from PIT or LOT tests, variations in actual mud weight used in a well, drill cuttings in the annulus which increase the annular mud weight, and annular friction losses which contribute to ECD.

The SF is defined as the lesser of 40 kg/m3 (0.334 ppg) calculated at the PIT (or LOT) depth, or the appropriate value from the following table:

Interval	SF (kPa)	SF (psi)
Below 20" Conductor Casing	225	33
Below 13-3/8" Surface Casing	345	50
Below 9-5/8" Intermediate Casing	690	100

The appropriate SF value from the tabulation should be converted into an equivalent mud weight (EMW) for use in the KT criteria as follows:

$$SF\ (ppg) = \frac{SF\ (psi)}{(DPIT) \times (0.052)}$$

2) *Calculate Loss of Hydrostatic Due to Influx*

For the purposes of calculating reduction in KT, this procedure assumes that the influx fluid is always gas since this would cause the greatest reduction in hydrostatic pressure.

Two assumptions are made at this point in order to calculate the influx impact on KT. First, it is assumed that a single "bubble" enters the wellbore, and that the bubble weight is negligible. Second, it is assumed that the annular space that the influx occupies is no longer than the BHA length in the well, and that the drill collars in the BHA are all of the same OD.

The length of influx (Li), is dependent upon the pit gain (Vi) and the annular space between the drill collars in the BHA and the diameter of the hole being drilled; Li is calculated as follows:

$$Li = \frac{(Vi) \times (1029.4)}{(DH)^2 - (DC)^2}$$

(where ^2 indicates squared value)

Therefore, the reduction in hydrostatic (RH) is calculated as follows:

$$RH = (AMW) \times (Li) \times (0.052)$$

(where RH is expressed in units of psi)

Expressed in terms of an equivalent mud weight (EMW), RH is calculated as follows:

$$RH = \frac{(AMW) \times (Li)}{TD}$$

(where RH is expressed in units of ppg)

Note that the influx volume assumption varies as the kick tolerance level changes. The explanation of KT levels will be addressed later on in this discussion.

3) *Calculate the Surge Gradient (SG)*

The Surge Gradient (SG) accounts for the resistance to flow of the non-newtonian fluids present in the wellbore when attempting to initiate flow. The SG can be calculated as follows:

$$SG = \frac{(0.0445) \times (YP) \times (DPIT)}{(DH - DP) \times (TD) \times (0.052)}$$

where SG is expressed in units of ppg.

4) *Calculate the Riser Margin (RM)*

In the event that the riser either fails or is removed, a resultant loss of hydrostatic pressure is experienced in the wellbore. The increase in mud density required to compensate for the maximum loss of hydrostatic pressure calculated to the wellhead, is referred to as the Riser Margin (RM). The RM is calculated as follows:

$$RM = \frac{[(TD) \times (AMW)] - [(DW) \times (9.0)]}{(TD) - (DW + DA)} - (AMW)$$

where: weight of seawater = 9.0 ppg,
and for the Kulluk at Kuvlum,
DW = 103 feet water depth + glory hole depth of 35 feet = 138 feet = DW
DA = 66 feet

5) *Calculate the Allowance Factor (A)*

The kick tolerance criteria should include the greater of either the combined influx and surge gradient (SG) allowance OR the riser margin (RM). Therefore, the calculation for the AW is made as follows:

$$A = \frac{(AMW) \times (Li)}{TD} + SG$$

OR

RM as calculated above, whichever is greater.

6) *Calculate the Kick Tolerance (KT)*

The final Kick Tolerance expression is as follows:

$$KT = \frac{DPIT}{TD}(EMW - AMW - SF) - A$$

where: EMW is the equivalent mud weight recorded during the PIT or LOT as appropriate.

C. Definition of Kick Tolerance Levels

The three levels of Kick Tolerance (KT) are defined as follows:

Level 1

KT greater than 1.0 ppg. Influx volume (Vi) = 25 bbls

Level 2

KT greater than 0.5 ppg. Influx volume (Vi) = 19 bbls

Level 3

KT greater than 0.0 ppg. Influx volume (Vi) = 13 bbls

Note: In all of the above cases, the influx density is assumed to be negligible.

D. Kick Tolerance Operating Conditions

Drilling Operations

	Level 1	Level 2	Level 3
Influx Volume Kick Tolerance	(Vi = 25 bbls) (KT ≥ 1.0 ppg)	(Vi = 19 bbls) (KT ≥ 0.5 ppg)	(Vi = 13 bbls) (KT ≥ 0 ppg)
Drilling Rate	As hole conditions dictate	Limit cuttings in hole to a max. of 60 feet	Limit cuttings in hole to a max. of 30 feet, maintain constant WOB, RPM, and circulation rate.
Drilling Breaks.	Flow check.	Flow check, consider circulating B/U sample	Shut in well.
Dummy Connections.	As required.	As required.	Every 1/2 single if increasing pore pressures are indicated, or expect to POOH in near future.
Variations in hook load, rotary torque and pump pressure.	Flow check.	Flow check.	Flow check.
Sharp increase in background gas, or significant increase in connection gas.	Flow check, consider increasing mud density	Flow check, confirm mud density out at desired value. Consider increasing mud density, make dummy connection, prior to drilling ahead.	Flow check, circulate B/U, and ensure mud column consistent and correct density, make dummy connection or short trip and circulate B/U prior to drilling ahead.

	Level 1	Level 2	Level 3
Influx Volume Kick Tolerance	(Vi = 25 bbls) (KT ≥ 1.0 ppg)	(Vi = 19 bbls) (KT ≥ 0.5 ppg)	(Vi = 13 bbls) (KT ≥ 0 ppg)
Tripping	Flow check after 5 & 10 stands, after tight hole, at casing shoe & prior to drill collars at BOP stack.	Flow check every 5 stands, at csg shoe & prior to drill collars at BOP stack.	Flow check every 5 stands, at csg shoe & prior to drill collars at BOP stack.
Trip Speed.	Calculate for each trip based on swab and surge pressures.	Calculate for each trip based on swab and surge pressures.	Calculate for each trip based on swab and surge pressures.
Hole filling/displacement while tripping.	Use trip tank.	Use trip tank.	Use trip tank.
Prior to resuming drilling ahead, after a round trip.	Circulate out fill and B/U as required.	Circulate B/U before resuming drilling new formation.	Circulate B/U, if the mud density is to be increased more than 0.5 ppg, complete mud treatment before drilling ahead.
Surveys.	As required.	As required.	No surveys on check trip. No wireline survey operations in open hole.
Drill Crews.	Normal routines.	Normal routines.	Driller to be relieved by Tool pusher only, 2 floor hands to be on rig floor at all times.

//

Drilling Fluid Management

	Level 1	Level 2	Level 3
Influx Volume Kick Tolerance	(Vi = 25 bbls) (KT ≥ 1.0 ppg)	(Vi = 19 bbls) (KT ≥ 0.5 ppg)	(Vi = 13 bbls) (KT ≥ 0 ppg)
Mud Density.	Check and record every 15 min.	Check and record every 15 min.	Check and record every 10 min. Cease drilling and circulate and condition mud if mud density below 0.3 ppg of desired mud weight. Check mud for gas/oil/water cutting.
Physical Pit Level Measurement	Every 30 min.	Every 15 min.	Every 10 min.
Surface Volume.	As required.	To be reduced as is practical.	To be a minimum.
Degasser.	Run degasser as required.	Run degasser as required or every tour to check response.	Run degasser as required every 6 hrs. to check response.
Mud Additions.	Monitor rate of addition.	Monitor rate of addition, additional flow checks as required.	No additions to active system while drilling.

Mud Logging

	Level 1	Level 2	Level 3
Influx Volume Kick Tolerance	(Vi = 25 bbls) (KT ≥ 1.0 ppg)	(Vi = 19 bbls) (KT ≥ 0.5 ppg)	(Vi = 13 bbls) (KT ≥ 0 ppg)
Communications.	Normal.	Open from mud logger to rig floor.	Open from mud logger to rig floor.
Drilling Breaks.	Report to driller.	Report to driller then ARCO Drilling Supervisor	Report to driller then ARCO Drilling Supervisor
Drilling Trend Changes	Report to driller, then to ARCO Drilling Supervisor	Report to driller then ARCO Drilling Supervisor	Report to driller then ARCO Drilling Supervisor
Total Gas Monitoring	Calibrate daily.	Calibrate tourly, at a non-critical time.	Calibrate tourly, at a non-critical time.
Equipment malfunctions	Inform ARCO Drilling Supervisor each tour. Include on written daily report.	Inform ARCO Drilling Supervisor as malfunction detected. Include on written daily report.	Inform ARCO Drilling Supervisor Immediately malfunction detected. Include on written daily report..
Tripping	Check logging unit calibration against trip tank on first 10 stands.	Check logging unit calibration against trip tank for first 10 stands.	Check logging unit calibration against trip tank on first 10 stands or as directed by ARCO Drilling Supervisor.
(Engineering Assistance Program) Kick Analysis	Update data for each BHA.	Confirm data inputted each tour.	Confirm data inputted each tour.

General

	Level 1	Level 2	Level 3
Influx Volume Kick Tolerance	(Vi = 25 bbls) (KT ≥ 1.0 ppg)	(Vi = 19 bbls) (KT ≥ 0.5 ppg)	(Vi = 13 bbls) (KT ≥ 0 ppg)
B.O.P. Drills.	Weekly on first tour for each crew, and on each trip.	Weekly on first tour for each crew, and on each trip.	Each tour, and on each trip.
Doghouse Safety Meetings.	Each crew change.	Weekly.	Each tour.
Barite Plug.	Ensure chemicals available.	Review procedures, measure chemicals. Ensure cement unit operational.	Prepare mix water, line out cement unit.
Weather/Ice	Normal.	Ensure 'ST' time includes circulation time to weight up.	Ensure 'ST' time includes short trip end circulation time to weight up.
Electric-Logs	As required for geological evaluation.	As required by ARCO Drilling Supervisor for pore-pressure evaluation.	At least every 900 feet, or as required by ARCO Drilling Supervisor for pore-pressure evaluation.

E. Example of Kick Tolerance Calculation

The following example is provided to demonstrate the Kick Tolerance determination. The assumptions for the example attempt to utilize as close as possible the actual conditions anticipated at Kuvlum.

Assumptions:

13-3/8" Surface Casing set at 3,500' TVD as planned
Leakoff test on 13-3/8" shoe = 14.6 ppg EMW
DPIT = 3,520' TVD
Vi = 25 bbls (gas)
DH = 12-1/4"
DC = 8"
DP = 5"
TD = 8,000' TVD
AMW = 10.5 ppg
YP = 20
DW = 138 feet
DA = 66 feet

Example Calculation:

1) *Calculate SF*

$$SF\ (ppg) = \frac{SF\ (psi)}{(DPIT) \times (0.052)}$$

$$= \frac{50}{(3520) \times (0.052)}$$

$$= 0.273\ ppg$$

Thus, since 0.273 ppg is less than 0.334 ppg, use 0.273 ppg for SF.

2) *Calculate Loss of Hydrostatic Due to Influx*

$$Li = \frac{(Vi) \times (1029.4)}{(DH)^2 - (DC)^2}$$

$$= \frac{(25) \times (1029.4)}{(12.25)^2 - (8.0)^2}$$

$$= 287\ feet$$

$$RH = (AMW) \times (Li) \times (0.052)$$

$$= (10.5) \times (287) \times (0.052)$$

$$= 157 \text{ psi,}$$

or expresssed in ppg:

$$RH = \frac{(AMW) \times (Li)}{TD}$$

$$= \frac{(10.5) \times (287)}{(8000)}$$

$$= 0.377 \text{ ppg}$$

3) *Calculate the Surge Gradient*

$$SG = \frac{(0.0445) \times (YP) \times (DPIT)}{(DH-DP) \times (TD) \times (0.052)}$$

$$= \frac{(0.0445) \times (20) \times (3520)}{(12.25-5.0) \times (8000) \times (0.052)}$$

$$= 1.039 \text{ ppg}$$

4) *Calculate the Riser Margin*

$$RM = \frac{[(TD) \times (AMW)] - [(DW) \times (9.0)]}{(TD) - (DW + DA)} - (AMW)$$

$$= \frac{[(8000) \times (10.5)] - [(138) \times (9.0)]}{(8000) - (138 + 66)} - 10.5$$

$$= 0.115 \text{ ppg}$$

5) *Calculate the Allowance Factor*

$$A = \frac{(AMW) \times (Li)}{(TD)} + SG$$

$$= \frac{(10.5) \times (287)}{(8000)} + (1.039)$$

$$= 1.416 \text{ ppg}$$

RM = 0.115 ppg from step 4 above

Therefore, since A is greater than RM, use A = 1.416 ppg.

6) *Calculate the Kick Tolerance*

$$KT = \frac{DPIT}{TD}(EMW - AMW - SF) - A$$

$$= \frac{(3520)}{(8000)}(14.6 - 10.5 - 0.273) - 1.416$$

$$= 0.268 \text{ ppg}$$

Therefore, the kick tolerance level by definition would be Level III since the calculated KT value is between 0.0 and 0.5 ppg for the conditions assumed in this example.

F. Handy Conversion Factors

Multiply	By	To Get
kilopascals (kPa)	0.145033	psi
mm	0.03937	inches
m	3.2808	feet
kg	2.2046	lbs
m3	6.2893	bbls
bbls	42	gallons
kg/m3	0.008346	ppg
decanewtons (daN)	2.2482	lbs

TWM, 8/14/92

ALASKA CLEAN SEAS
NORTH SLOPE OPERATIONS
Date Produced: 06/05/92

ALASKA CLEAN SEAS EQUIPMENT REPORT
KUVLUM PROJECT

Equipment Tag#	AKOld Tag No.	Major Tag	Model No.	Manufacturer	Description	OLA	Loc	Rating		Length	Width	Height	Weight
ANCH-0019-01	BOM-009			DAVIS	ANCHOR SYSTEM, 400 (K	ACS-KUV-71	CNX-2009	10	EA	48	48	20	1600
BMFX-3703-B	BOM-010	BMFX-3703	CERBERIC LOG, 0.00 FT	3-M	BOOM, FIRE, 12 X 18 (K	ACS-KUV-71	CNX 2010	600	FT				7800
BMFX-3710-B	BOM-100	BMFX-3709	CERBERIC LOG, 0.00 FT	3-M	BOOM, FIRE, 12 X 18 (K	ACS-KUV-71	CNX-2009	200	FT				4000
BMOC-7000-B	BOM-013-1	BMOC-7000	SELF-INFLATE, 3.00 FT	KEPNER	BOOM, LT OCEAN, RESLPACK, 14 X 18 (K	ACS-KUV-71		1,000	FT	48	100	100	7000
BMRV-0011-BT	BOM-007	BMRV-0000-BT	FOAM LOG, 1.70 FT	TEXAS BOOM	BOOM, RIVER, 8 X 8 (K	ACS-KUV-71	CNX-2000	1,000	FT				1700
BOAT-0015	BTS-002	BOAT-0015		MARIAN	BOAT, 15FT ALUMINUM (K	ACS-KUV-71		0		201	10	72	
BOAT-0016	BTS-003	BOAT-0016		MARIAN	BOAT, 20FT ALUMINUM (K	ACS-KUV-71		0		201	10	72	
CONX-0019	VAN-010	BMFX-3702			CONEX, STORAGE CONTAINER, 20 X 8 (K	ACS-KUV-71		0		240	96	96	8140
CONX-0007					CONEX, STORAGE CONTAINER, 20 X 8 (K	ACS-KUV-71		0		240	96	96	8140
CONX-0008					CONEX, STORAGE CONTAINER, 20 X 8 (K	ACS-KUV-71		0		240	96	96	4070
CONX-0009					CONEX, STORAGE CONTAINER, 20 X 8 (K	ACS-KUV-71		0		240	96	96	8140
DHRL-0001	SKM-009-2	SKMR-0016		HYDE	DOUBLE HOSE REEL (K	ACS-KUV-71	CNX-2007	0		91	84	30	1300
GNEG-0010	GEN-010		17BA15-1A	HOMELITE BRIGG STRAT	GENERATOR, GAS, 1.0KW (K	ACS-KUV-71	CNX-2000	2	KW	20	24	27	110
GNEG-0014	GEN-014		6F-60HS	FINDOR BRIGGS STRAT	GENERATOR, GAS, 3KW (K	ACS-KUV-71	CNX-2000	3	KW	25	20	28	200
GNEG-0005	GEN-005		6R-60HS	MULTIQUIP	GENERATOR, GAS, 5KW (K	ACS-KUV-71	CNX-2000	5	KW	27	28	24	265
HOSD-0007	HSE-004	HOSD-0001		ARMOUR GUARD	HOSE, DISCHARGE, 3", ARCTIC (K	ACS-KUV-71	CNX-2007	600	FT				
HOSS-0002	HSE-001	HOSS-0001		BF GOODRICH	HOSE, SUCTION, 2", WIFISTINGS (K	ACS-KUV-71	CNX-2007	100	FT				
HOSS-0005	HSE-002	HOSS-0001		GOODRICH	HOSE, SUCTION, 3", ARCTIC (K	ACS-KUV-71	CNX-2007	100	FT				
HYPU-0017	SKM-009-3	SKMR-0016	DISPOSEC	HYDE	HYDRAULIC POWER UNIT, DEMS 200 CC (K	ACS-KUV-71	CNX-2007	20	HP	50	37	70	2000
HYPU-7000	BOM-014-2	BMOC-7000	HYPU, KEPNER	KEPNER	HYDRAULIC POWER UNIT W/ACCESS (K	ACS-KUV-71	CNX-2007	0		42	34	30	2000
HSH-0002	HSH-005		6400	SIMPLEX	HELITORCH, 55 GAL (K	ACS-KUV-71	CNX-2000	55	GAL	100	22	40	400
LVLW-7000	BOM-013-3	BMOC-7000	LEVEL WINDER, KEPNER	KEPNER	LEVEL WIND, HYDRAULIC (K	ACS-KUV-71		0		40	100	40	1000
PBLO-0000	BLO-000	BMOC-0001-0	PB400E		BLOWER, BOOM INFLATING (K	ACS-KUV-71	CNX-2000	0		20	15	120	15
PDED-0000	PMP-040		6000W	CHAS	PUMP, DIAPHRAGM, DIESEL, 3" (K	ACS-KUV-71	CNX-2000	140	GPM	20	20	21	200
PTED-0000	PMP-000		YDP4E	YANMAR	PUMP, TRASH, DIESEL, 4" (K	ACS-KUV-71	CNX-2000	200	GPM	20	20	20	200
PTED-0001	PMP-007		YDP6E	YANMAR	PUMP, TRASH, DIESEL, 6" (K	ACS-KUV-71	CNX-2000	300	GPM	20	20	20	200
PTGD-0000	PMP-000		DP6W	MULTIQUIPTOMAN	PUMP, TRASH, GAS, 2" (K	ACS-KUV-71	CNX-2000	200	GPM	20	20	20	100
RAVD-0004			SM310-2	CELWAVE	VHF OMNI WHIP 150-160MHZ	ACS-KUV-71		0		60	1		5
RDPV-0000			C6000E	SINCLAIR	VHF DUPLEXER	ACS-KUV-71		0					
RHVL-1002			HX600C/H68CN	MOTOROLA	RADIO, VHF, 80 CH, PROGRAMMABLE, MT1000	ACS-KUV-71		0			3	6	1

ALASKA CLEAN SEAS EQUIPMENT REPORT
KUVLUM PROJECT

Equipment Tag#	Alt/Old Tag No.	Major Tag	Model No.	Manufacturer	Description	OLA	Loc	Rating		Length	Width	Height	Weight
RHVL-0003			H4SSCJ7150CN	MOTOROLA	RADIO, VHF, 55-CH, PROGRAMMABLE, MT1000	ACS-KUV-71		0			3	5	1
RHVL-0005			H4SSCJ7150CN	MOTOROLA	RADIO, VHF, 55-CH, PROGRAMMABLE, MT1000	ACS-KUV-71		0			3	5	1
RHVL-0006			H4SSCJ7150CN	MOTOROLA	RADIO, VHF, 55-CH, PROGRAMMABLE, MT1000	ACS-KUV-71		0			3	5	1
RMVL-0001	RAD-007		DCD0000000	GENERAL ELECTRIC	RADIO, VHF MARINE BASE /REPEATER/DS48	ACS-KUV-71		0					
SKDI-0002	SKD-017	SKDI-0002	MI-30	MOPPER	SKIMMER, DISC, MI-30 (K	ACS-KUV-71	CNX-3000	30	BPH	30	30	24	600
SKDM-0001	SKM-000-1	APU-0001	TDS-118	ELASTEC	SKIMMER, DRUM (K	ACS-KUV-71	CNX-3000	25	GPM	34	48	18	70
SKMP-0007	MOP-007		Z14E-L	CBI	ROPE MOP PACKAGE, Z14-E (K	ACS-KUV-71	CNX-0007	14	BPH	48	48	48	400
SKWR-0005	SKM-005		SLURP	SEAWARD INTL	SKIMMER, WEIR, PORTABLE, SLURP (K	ACS-KUV-71	CNX-3000	60	BPH	48	48	31	100
SKWR-0012	SKM-003-1	SKWR-0012	250	DESMI	SKIMMER, DESMI 250, (DESTROL OCEAN)K	ACS-KUV-71	CNX-0007	600	BPH	91	64	78	400
SORB-0001-71	SRB-005	SORB-0001-70		3M	ABSORBENT, VISCOUS	ACS-KUV-71	CNX-3000	5	BAG				
SORB-0100-1	SRB-005-000	SORB-0100	TYPE 100 36" X 150'	3M	SORBENT ROLL, 36" X 150 FT	ACS-KUV-71	CNX-3000	10	ROLL	38	38	36	35
SORB-0151-71	SRB-004	SORB-0004	TYPE 151 18" X 18"	3M	SORBENT PAD, 18 X 18	ACS-KUV-71	CNX-0000	10	BDL	19	18	20	15
TKBL-0040-TH	STG-076		DLE-2	CANFLEX	TANK, BLADDER, TOWABLE, HELICOPTER (K	ACS-KUV-71	CNX-3000	600	GAL	48	48	30	300
TKBL-0044-TH	STG-076		DLE-2	CANFLEX	TANK, BLADDER, TOWABLE, HELICOPTER (K	ACS-KUV-71	CNX-3000	600	GAL	48	48	30	320
TKBL-0045-TH	STG-077		DLE-2	CANFLEX	TANK, BLADDER, TOWABLE, HELICOPTER (K	ACS-KUV-71	CNX-3000	600	GAL	48	48	30	320
TKBL-0046-TH	STG-078		DLE-2	CANFLEX	TANK, BLADDER, TOWABLE, HELICOPTER (K	ACS-KUV-71	CNX-3000	550	GAL	48	48	30	320
TKBL-0010-T	STG-000		3000 GAL	HOYLE	TANK, FLOATING, TOWABLE (K	ACS-KUV-71	CNX-3000	3,000	GAL	48	48	30	375
TKBL-0000-T	STG-004		6000 GAL	HOYLE	TANK, FLOATING, TOWABLE (K	ACS-KUV-71	CNX-3000	6,000	GAL	48	48	30	450
TKBL-0001-T	STG-005		6000 GAL	HOYLE	TANK, FLOATING, TOWABLE (K	ACS-KUV-71	CNX-3000	6,000	GAL	48	48	30	300
TKBL-0005-T	STG-005		6000 GAL	HOYLE	TANK, FLOATING, TOWABLE (K	ACS-KUV-71	CNX-3000	5,000	GAL	48	48	30	450
TKFT-0410	STG-006		FASTANK	FAST ENGINEERING	TANK, VIAL INGR (K	ACS-KUV-71	CNX-3000	2,000	GAL	60	16	30	100
TKFT-0416	STG-007		FASTANK	FAST ENGINEERING	TANK, VIAL/INGR (K	ACS-KUV-71	CNX-3000	2,000	GAL	60	16	30	100
TKSS-0002	OTS-002		OST-2000	ORION ELECTRONICS	ORION OIL SPILL TRACKING SYSTEM (K	ACS-KUV-71	CNX-3000	4	BUOY	48	30	14	100

TABLE 27.8.2

ALERT STATUS	INTERPRETATION	HAZARDS SOURCE	ALERT STATUS	DRILLING RESPONSE	MARINE RESPONSE
GREEN	NORMAL OPERATIONS	ENVIRONMENT	HT-ST IS MORE THAN 12 HOURS	RESTRICT OPERATIONS TO AVAILABLE LEADTIME	NORMAL WATCH
		WELL	KT IS ON LEVEL I	NORMAL WELL MONITORING AS PER KT=I	
		VESSEL	ALL EQUIPMENT FULLY OPERATIONAL	NORMAL DRILLING OPERATIONS	
BLUE	EARLY ALERT	ENVIRONMENT	HT-ST IS LESS THAN 12 HOURS	RESTRICT OPERATIONS TO AVAILABLE LEAD TIME	NORMAL WATCH
		WELL	KT IS ON LEVEL II	INCREASE WELL MONITORING VIGILANCE AS PER KT=II	
		VESSEL	MINOR EQUIPMENT MALFUNCTION	NORMAL DRILLING OPERATIONS	
YELLOW	EARLY WARNING	ENVIRONMENT	HT-ST IS LESS THAN 6 HOURS	RESTRICT OPERATIONS TO AVAILABLE LEAD TIME	PREPARE FOR HAZARD ARRIVAL
		WELL	KT IS ON LEVEL III. GAS LEVELS HIGH	RESTRICT DRILLING TO ENHANCE WELL MONITORING AS PER KT=III	ALERT WATCH
		VESSEL	MAJOR EQUIPMENT MALFUNCTION. PROCEDURES REQUIRE VIGILANCE BEING CONDUCTED	RESTRICT DRILLING OPERATIONS AS REQUIRED	
RED	HAZARD PRESENT	ENVIRONMENT	HT-ST IS 0 OR LESS	STOP OPERATIONS AND SECURE WELL AND DISCONNECT	SECURE VESSEL
		WELL	WELL CONTROL OPERATIONS IN EFFECT	CONTROL WELL, AND ADVISE BARGE AS TO DEGREE OF KICK SEVERITY	SECURE VESSEL STANDBY WATCH
		VESSEL	ESSENTIAL EQUIPMENT MALFUNCTION VESSEL STABILITY OR INTEGRITY COMPROMISED	STOP OPERATIONS AND SECURE WELL	SECURE VESSEL
BLACK	HAZARD THREATENS PERSONNEL SAFETY AND/OR VESSEL STABILITY AND INTEGRITY	ENVIRONMENT	HAZARD IS EQUAL TO OR LESS THAN VESSEL SECURE TIME & EVAC. TIME	USE EMERGENCY PROCEDURES TO SECURE WELL IF NECESSARY	EVACUATE PERSONNEL
		WELL	CONTROL OF WELL IN DANGER OF, OR HAS BEEN LOST	USE EMERGENCY PROCEDURES TO SECURE WELL	
		VESSEL	VESSEL STABILITY, OR INTEGRITY IN DANGER OF, OR HAS BEEN LOST	USE EMERGENCY PROCEDURES TO SECURE WELL	

KULLUK ALERT STATUS SYSTEM

VESSEL DRILLING OPERATING CRITERIA

	Pitch Roll	Heave		Surge Sway		Lower Ball Joint Angle	Upper Ball Joint Angle
	Degrees	m	ft	m	ft	Degrees	Degrees
Towing	6	NA	NA	NA	NA	NA	NA
Run Glory Hole Bit & Caisson	1	.9	3	.5	1.6	NA	NA
Pull Glory Hole Bit	1.5	1.2	4	.5	1.6	NA	NA
Drilling Glory Hole	2	1.2	4	.5	1.6	NA	NA
Drilling	3	2.4	8	1	3	1	1
Tripping	3	2.4	8	1	3	1	1
Logging	3	1.5	5	1	3	2	2
Run Casing	2	1.8	6	.5	1.6	1	1
Landing Casing with DMC	2	1.8	6	.5	1.6	1	1
Landing Casing without DMC	2	.9	3	.5	1.6	1	1
Cementing Casing	3	1.8	6	1	3	1	1
Handling BOP at Surface	1.5	1.2	4	NA	NA	NA	NA
Running/Pulling BOP	1.5	1.2	4	1	3	NA	NA
Landing BOP with TV	2	.9	3	1	3	NA	NA
Landing BOP w/Divers Visibility OK No Visibility	2 1	.9 .3	3 1	1 .5	3 1.6	NA NA	NA NA
Disconnecting BOP	2	1.2	4	1	3	1	1
Landing LMRP with TV	2	.9	3	1	3	NA	NA
Landing LMRP W/Divers Visibility/Adequate No Visibility	2 1	.9 .3	3 1	1 .5	3 1.6	NA NA	NA NA
LMRP Pulling	4	2.4	8	2	6	3	3
Testing	1.5	1.5	5	.5	1.6	1	1
General Crane Operations	2	1.8	6	NA	NA	NA	NA
Hang off Drill String	>3		>8	>1	>3	>3	>3
Disconnect	4	10		10% of	WD	4	4

vesseldr.rp

KUVLUM PROJECT

REGIONAL ICE SURVEILLANCE SYSTEMS

SYSTEM	SUPPLIER	FREQUENCY	COMMENTS
1. Weather Forecasts	Fairweather	12 hrs.	6 hr. updates if required. These forecasts assist with the prediction of ice movement, which is primarily wind-driven.
2. Ice Charts	Atmospheric Environment Service (AES) Canada	Daily	Simple chart of ice type and distribution across the Beaufort coastline. Supplemented with bi-weekly long-range ice forecasts.
3. Argos Buoys	AES/International buoy program + Fairweather	Daily	Buoys will be deployed as required and data from these, plus any other buoys in the area, reported on the daily weather forecast.
4. NOAA Imagery	AES	Daily or as required	Frequency dependent upon ice conditions. A dial-in modem system will now make these available on a daily basis.
5. Satellite Synthetic Aperture Radar (SAR)	ERS-1/Radarsat	As required	Currently experimenting with this new system. The first images are being reviewed and the delivery time investigated for improvement.
6. Airborne SAR	AES/Interra	As required	A downlink is installed on the Kulluk and over flights will be ordered if necessary.

U.S. DEPARTMENT OF THE INTERIOR
MINERALS MANAGEMENT SERVICE

ROUTING OF THIS TELEPHONE CONVERSATION RECORD		DATE: 8/10/92
1 Rod	4 cc: Al Powers (RD)	
2 Barry BAB	5 cc: Jon Nauman; Brian Schoof	TIME ORIG:
3 Jeff	6	TIME RCVD: 2:00 pm

NOTE: LAST READER DISCARDS THIS COPY UNLESS ROUTING INDICATES IT BE SENT TO FILE

CALL TO: Jim Regg	**CALL FROM:** Mark Schindler
TITLE: Supervisor, ORA (acting) x9187	**TITLE:** ARCO 263-4766
SUBJECT: Air Quality Issue - Kuvlum	

Mark called to check on the status of the whale monitoring plan approval and to brief us on the final outcome of their negotiations with EPA regarding compliance with the new air quality rule. I told Mark that the whale monitoring plan approval was being signed by the Regional Director today.

Arco's intent in discussions with the EPA was to obtain explicit wording in the regulations which would provide a transition for compliance with the new air quality rule (AQR). Mark said that EPA has agreed to including wording in the preamble and regulations which would provide a 30-day transition period for the Kuvlum operations, although the exact wording was not yet known. The 30-day transition period would begin with the effective date of the rule, expected to be September 1. During that time, Arco would be considered in compliance with the rule but must apply for a permit under the new AQR by October 1. The permit application to EPA would be for a Prevention of Significant Deterioration (PSD) permit in compliance with State of Alaska rules.

Arco believes that they could be vulnerable to an injunction during the 30-day interim period. Mark says that EPA suggested

Arco's best defense to any injunction would be demonstrating compliance with Best Available Control Technology (BACT) or providing an explanation why such was not practicable. Arco is documenting their attempts to comply with BACT, including following up on several areas identified by EPA to reduce SO_2 and NO_x:

- use low sulphur fuel, i.e., <.05% sulphur by weight; fuel used for Kuvlum operations has .024% sulphur by weight;
- Arco has asked BeauDril, Mesa (formerly Wartsilla), and Caterpillar to asses ways to reduce NO_x emissions from the *Kulluk* and ice breakers; Mark said that the NO_x calculations were overestimated, based on 67% throttle (actual 50%) and 60 days of activities (probably will be less).

Mark said that EPA was looking for a 30% reduction in emissions at Kuvlum instead of setting some actual emission levels for compliance with BACT. He believes that Arco will be able to show compliance with the above BACT (or provide valid reasons why compliance is not practicable). The analysis and application for a PSD permit will be initiated soon.

Mark also offered his thanks and appreciation for the efforts of Tom Gernhofer and Jeff Zippin. He feels that the MMS support had a positive effect on the outcome of this issue.

Jim Regg

Jim

United States Department of the Interior

MINERALS MANAGEMENT SERVICE
WASHINGTON, D.C. 20240

JUL 28 1992

Ms. Alison Bird
Air and Toxics Division (A-2)
U.S. Environmental Protection Agency
Region 9
75 Hawthorne Street
San Francisco, California 94105

Dear Ms. Bird:

I am writing to express concerns the Minerals Management Service (MMS) has regarding the air quality permitting situation for ARCO's proposed Kuvlum Prospect exploration drilling in the Beaufort Sea, Alaska. We understand you are currently considering whether this project is an existing source or a new source under the pending air quality regulations [40 CFR Part 55] for the outer continental shelf (OCS). The MMS believes that the Kuvlum Prospect exploration is an existing source.

We are very appreciative of the cooperative spirit EPA has displayed in developing the OCS rules. I want to assure you from the outset that the MMS has no intention of becoming involved on a routine basis in Environmental Protection Agency (EPA) permitting for OCS activities. However, the ARCO project is unique for the following reasons, each of which is addressed in this letter:

- Both preliminary onsite work and MMS approval of ARCO's exploration plan (EP) were commenced and concluded before publication of the notice of proposed rulemaking (NPR).

- ARCO's project, if considered a new source, would fall in the period of undefined requirements between the NPR and promulgation of the final rule, thus creating a regulatory dilemma for any drilling during this period.

- Because MMS currently has regulatory authority over OCS facilities and, according to EPA's interpretation, will retain authority over existing facilities until they come into compliance with EPA's regulations--within 24 months of promulgation--we have an interest in EPA's determination of this matter.

Work Completed before NPR

Through the OCS air quality rulemaking, both EPA and MMS have learned that statutes intended to apply onshore translate with difficulty to regulation of OCS activities. Oil and gas drilling on the OCS is not like onshore drilling and is subject to very

different procedures for the applicant and the regulatory agency. The OCS Lands Act allows very limited times for permit review by the MMS; for example, a 30-day review for EP approvals. Due to this timing, MMS staff does not conduct onsite surveys and collect information needed for permitting and environmental analyses. Rather, MMS's regulations [30 CFR 250.31 and 250.33] and lease stipulations require applicants to conduct certain preliminary activities on their leases to gather the site-specific information MMS must have to complete the EP review. These activities--geological and geophysical surveys, archaeological surveys, benthic sampling, coring, and biological surveys--represent a major commitment prior to even submitting the request for EP approval. MMS completed its review and approved ARCO's Kuvlum Prospect EP in August 1990.

Sometimes, it is not possible to determine the appropriate type of drilling unit--jack-up rig, semi-submersible, drill ship--until these surveys are complete. Then, commitments must be made well in advance of drilling to secure a drilling unit. In October 1991, ARCO purchased an option and has now contracted for use of the drilling vessel Kulluk to drill the Kuvlum Prospect starting in August 1992. In light of the lead time necessary to secure an appropriate vessel and other preliminary requirements, the MMS believes ARCO has commenced its project and has begun to meet its "due diligence" obligations under its approved EP.

EPA Proposed Regulations

Our understanding is that EPA has interpreted the requirements of Sections 111(a) and 328 of the Clean Air Act and the proposed regulations at 40 CFR Part 55 to consider an OCS project a new source if it "commences" after the December 5, 1991, NPR. Thus, if the ARCO project were deemed a new source, it would have to be in compliance with the regulations on the date of promulgation. However, ARCO could not even have tried to obtain pre-construction permits from MMS under the rules which could be deemed applicable because the the regulations necessary for compliance were not and have not been promulgated.

We believe ARCO's Kuvlum Prospect is an existing source within the meaning of Section 111(a), however, due to the uncertainties raised, ARCO could find itself facing the prospect of losing more than $15 million if this season's drilling in the Beaufort Sea cannot proceed.

MMS Regulatory Authority

Through our discussions with EPA on the proposed OCS regulations, we have learned that EPA believes that existing OCS facilities will continue to be subject to the extant MMS permit conditions and enforcement authority until such facilities come into compliance with EPA regulations. Therefore, over the next 24

months, the MMS must work closely with EPA in regulating OCS sources to ensure a smooth transition to EPA jurisdiction.

During this period, as the MMS must continue to exercise its responsibilities regarding these facilities, it will be appropriate for EPA to consult with the MMS on matters related to existing OCS facilities, including the decision of whether an activity is a new or existing source. We believe the ARCO situation is just such an instance where EPA should consult with MMS on the existing/new determination.

Finally, I want to reiterate the importance of the Kuvlum Prospect to the OCS program in Alaska. A major discovery at the Kuvlum location could provide the infrastructure to allow smaller, neighboring discoveries in the Beaufort Sea to be produced. Owing to its proximity to the Section 1002 area of the Arctic National Wildlife Refuge, this prospect, successful or otherwise, will yield valuable geologic data on the OCS and adjacent coastal plain.

If there are any questions regarding this letter, or for discussions on the ARCO determination, please contact Jeffrey Zippin, Chief, Environmental Operations and Analysis Branch, 703-787-1729.

Sincerely,

Thomas Gernhofer
Associate Director for
Offshore Minerals Management

cc: Tom Kiernen, EPA
Thomas Eagles, EPA
Troy Hilliar, OMB
Judy Thomas, ARCO

AUTOMATIC COVER SHEET

DATE: JUL-29-92 THU 12:25

TO:

FAX #: 89072716805

FROM: OFFSHORE

FAX #: 2086048

05 PAGES WERE SENT

(INCLUDING THIS COVER PAGE)

United States Department of the Interior

MINERALS MANAGEMENT SERVICE
WASHINGTON, D.C. 20240

JUL 28 1992

Ms. Alison Bird
Air and Toxics Division (A-2)
U.S. Environmental Protection Agency
Region 9
75 Hawthorne Street
San Francisco, California 94105

Dear Ms. Bird:

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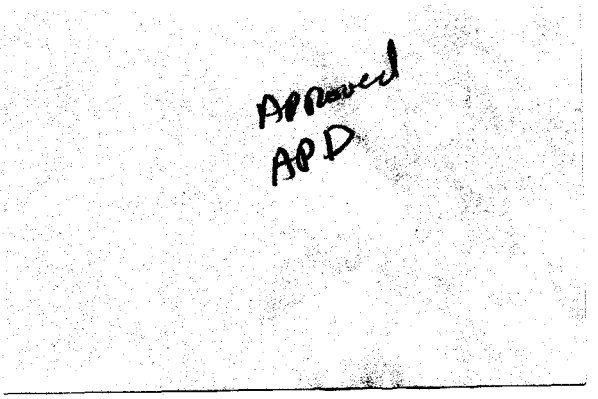

AUG 7 1992

Mr. M. B. Winfree
ARCO Alaska, Inc.
P.O. Box 100360
Anchorage, Alaska 99510-0360

Dear Mr. Winfree:

Enclosed are the approved Application for Permit to Drill for OCS-Y 0866 #1, Kuvlum Prospect and the Conditions of Approval for the proposed operations. Your departure requests, as noted in APD attachment 1, are approved. Regarding visual BOP stack inspections, coordination with other routine dives will satify our requirements.

The API number is 55-171-00008 for the Kuvlum Prospect.

As per our previous discussions the following additional information/conditions need to be addressed prior to commencement of drilling operations.

1. Regarding meteorological and oceanographic data: "Be advised that the 30 CFR 250.51(c) regulations require lessees/operators to collect and report oceanographic, meteorological, and performance data during the period of operations. The data shall be recorded and reported in accordance with the Minerals Management Service (MMS) guidelines dated April 14, 1986 (copy attached). Daily summary reports of the data must be submitted to the District Supervisor with the Daily Drilling Report, and should include the following information:

- critical meteorological and oceanographic data at report time and forecasted for the next 24-hour period, including winds (speed and direction), waves, ice concentration, distance to nearest hazardous ice which could affect operations, air and sea water (surface) temperatures;

- drilling vessel performance data, including anchor tensions;

- alert status at report time (including Hazard Time (HT) and Secure Time (ST)); and a summary of alerts for the past 24 hours, including conditions causing changes and the actions taken in response to the changing alert level."

This supersedes the weather, ice and environmental information collection requirement established in # 2 of the enclosed Conditions of Approval. Table 6 of the Critical Operations and Curtailment Plan (COCP) identifies several weather and ocean data which would be collected "if required." Arco will not be required to collect currents and temperature and salinity profiles for the Kuvlum well; sea surface temperatures should be reported; unmanned weather station forecasts should be reported if available.

2. In accordance with 30 CFR 250.67(c), this office concurs with your proposed classification at the Kuvlum Prospect as an area where the presence of H_2S is unknown. Accordingly, the requirements of 30 CFR 250.67(c) will apply to your drilling program.

3. Exploratory activities associated with the Kuvlum Prospect may be conducted during the fall bowhead whale migration only if a bowhead whale monitoring program has been approved by the MMS and is actively being pursued.

4. MMS will be conducting NPDES permit compliance inspections during drilling operations at the Kuvlum location under an agreement with the Alaska Operations Office of the Environmental Protection Agency (EPA). The inspection program is based on records checks and witnessing lessee sampling and testing of drilling discharges. The MMS will not engage in sample collections and testing as part of this effort. The results of these inspections will be provided to the EPA. Attached for your information is a copy of the inspection list which will be used for these inspections.

5. We have identified a discrepancy between the relief well plan information submitted by Chevron USA (Chevron) in the EP and the information submitted by ARCO in the APD. Of particular concern is Chevron's discussion of a barge which would contain pre-staged relief well drilling equipment and supplies. The information submitted by ARCO indicates that relief well equipment and supplies will be obtained from onshore sources. ARCO should clarify this issue and adjust their projections for the time to drill a relief well.

6. The information submitted on July 17, 1992, included a complete listing of Alaska Clean Seas (ACS) equipment in Prudhoe Bay, but did not contain a breakdown of oil-spill-response equipment that would be located on the ACS barge. We request that you submit to this office an inventory listing of spill-response equipment that has been loaded on ACS's spill-response barge. In addition you must notify the District Supervisor at once if the ready status of the barge changes significantly during the drilling operation.

7. We need an explaination on what kick tolerance method will be used in determining each well alert level, and the action to be taken at each level.

8. Furnish an explanation of how anchor tensions will be used in decisions to suspend operations, service the well, or to elevate the alert status. We note that Figure 13 of the COCP identifies 40 percent, 50 percent and 80 percent values, presumably based on the

pretension ARCO should explain the significance of these values.

9. In the COCP Table 27.8.2 should be revised to correct the reference to "ET"; and to correct the meaning of a "Green" Environmental Alert.

10. Information which characterizes and quantifies each environmental alert level; i.e., the wind, wave, vessel motion, ice conditions, anchor tension, etc., that would correspond to each alert stage must be provided.

11. The ice surveillance (airborne radar, satellite imagery, reconnaissance, etc.) to be employed at the Kuvlum location was discussed in the meeting. Please furnish information regarding the type of surveillance ARCO will rely on to identify hazardous ice. Also, we note that BeauDril indicated in the meeting that they are experimenting with a new satellite imaging system. We would appreciate being kept informed of this system if it is to be used for ice surveillance and forecasting at the Kuvlum location.

Any questions pertaining to the COCP should be directed to Tom Murrell or Jim Regg at extension 6188.

Sincerely,

/S/ J. Regg

Jim Regg
Acting Supervisor, District Office
Field Operations

2 Enclosures

bcc: OCS-Y 0866 - 3B Area/District
Chrons - Area/Dist/CC/RD

TMurrell\DChoromanski:8/5/92:nep:8/7/92
F:\USERS\DO\KUV-APD.MEM

UNITED STATES GOVERNMENT
MEMORANDUM

JUL 2 4 1992

To: District Supervisor

From: Acting District Engineer (Orig. Sgd.) J.C. Jeschke

Subject: Engineering Review of the ARCO Alaska, Inc., (ARCO) Application for Permit to Drill (APD) for the Kuvlum Prospect

I have completed my engineering review of the subject APD. Below are recommended changes to make the document consistent with ARCO's drilling plans and MMS' regulations:

1. The proprietary copy of form MMS-331C contains numerous errors that require completion. Below is the list of errors found during the review:

a. During a telephone conversation with Lowell Crane, Mr. Crane indicated that the 30-inch casing will be set at 320 feet rather than 276 feet.

b. There is no cement volume indicated for the 9 5/8- inch casing string. Although the volume may be found in the APD documentation, it should also be reported on this form.

c. 30 CFR 250.54 (c)(3) requires the surface casing to be cemented at least 200 feet into the conductor string. My calculations indicate the cement top to be at approximately 1,300 RKB feet rather than 800 RKB. If indeed ARCO wishes to only cement to 1,300 feet RKB, a departure may be warranted.

d. ARCO has indicated that they wish to permit the well to 12,000 feet even though drilling past 8,500 feet is unlikely. I understand that setting the 7-inch liner is only a "contingency" measure if ARCO decides to drill to 12,000 feet. However, the proper approach would be to permit the well to the 12,000 foot level and submit a sundry notice for change, should ARCO decide to discontinue drilling at 8,500 feet. Given the aforementioned, ARCO should include casing and cement information concerning the 7-inch liner on this form.

2. The introduction for section 1.0 incorrectly references the offshore protraction diagram (OPD) number. For consistency, I recommend the OPD number be changed to NR 6-4.

3. Section 2.0 includes a table indicating the expected fracture gradient at the Kuvlum site. I compared these values against the actual leak off values obtained at Corona, Hammerhead 1 and Hammerhead 2. It appears that the ARCO's values for the 20-inch and 13 3/8-inch leak off are somewhat high. Corona had the lowest leak off at the 20-inch shoe (1,028 ft RKB) of 11.7 pounds per gallon (ppg), and all three wells

agreed on 14.0 ppg at the 13 3/8-inch shoe (approximately 2,700 ft RKB). Although ARCO's assumptions are approximately correct and changes would not likely change any of their calculations, I would recommend taking the more conservative approach and utilizing the lower values.

4. It may be advantageous to ARCO to let them know whether or not we will require them to remove the glory hole caisson to 15 feet below mud line as required by 30 CFR 250.112 (i).

5. Section 2.6 A. indicates the structural casing will be set at 400 feet RKB. During a telephone conversation with Lowell Crane, Mr. Crane indicated that the setting depth is actually 320 feet RKB. For accuracy, I recommend changing this section to reflect the correct setting depth.

6. Section 2.6 C. indicates an incorrect wall thickness for the 13 3/8-inch casing. For accuracy, I recommend changing the wall thickness to 0.480 inch.

7. Section 2.7 needs to include wording that states ARCO will pressure test the casing following prolonged milling, fishing, jarring, washover, or other operations which could damage the casing every 30 days. As worded, ARCO will only pressure test the casing after prolonged drilling operations. If ARCO intends to deviate from the regulations (250.55(c)), a request for departure is recommended.

8. ARCO has requested to drill the 20-inch section of hole riserless. In the offshore drilling industry, there are varying opinions over the efficacy of utilizing a diverter for a shallow gas kick versus venting gas at the sea floor. Some experts maintain that the diverter could become blocked by formation material, cause further problems and, possibly, damage; whereas venting the gas (in the absence of a riser) at the sea floor allows the gas to disperse through the water column. If the well is drilled riserless and shallow gas is encountered, the Kulluk could quickly disconnect and move off location to allow the zone to deplete. Given the two viewpoints, the MMS should maintain an open mind concerning this technique. However, if ARCO wishes to utilize the proposed technique, we would at a minimum, need some documentation concerning Beaudril's experience as well as detailed documentation or references outlining the technique. At the very minimum, I think we would be much more comfortable with the technique if ARCO utilized a pilot hole for the 20-inch and posted additional watches outboard of the Kulluk.

9. 30 CFR 250.57(c) states that the choke and the ram-type blowout preventer's (BOP) shall be tested to their working pressure. Table 3-6 indicates that ARCO will test these components to pressures less than their rated working pressure. If ARCO intends to utilize the indicated pressures, they may need a departure.

10. Attachment II, page 2, section IID. This section lists the location of each H_2S detector. No detector is listed for the Bell Nipple. Some compensation is necessary to fulfill this requirement. As I recall, we allowed AMOCO to have a portable detector

on the drill floor in lieu of the detector at the Bell Nipple when they used the Kulluk on the Belcher Prospect. Although such an option is not preferred, it would likely be acceptable.

11. Attachment II, page 5, section IIIB. This section indicates that ARCO wishes to calibrate H_2S detectors on a basis other than every 24 hours. Because 30 CFR 250.67 h(5)ii requires all detectors to be calibrated every 24 hours, ARCO should request a departure if they intend to utilize an alternate testing strategy.

12. Attachment II, page 10, section V 13. The phone numbers listed here are incorrect. ARCO should contact the U.S. Coast Guard concerning the appropriate phone numbers. MMS' phone number should be changed to 271-6066.

13. While I agree that the possibility of utilizing a relief well for well control is remote, I believe that additional information may be necessary in the well control plan. As has been indicated to ARCO during meetings with us, the Relief Well Plan is seen more as a well control plan and should therefore outline ARCO's plans should well control be lost. For example, would ARCO contact a well control specialist such as Boots & Coots? What well control equipment does Boots & Coots or similar companies maintain in the area? At what point would ARCO decide to mobilize for drilling relief well activities? It may be advantageous for ARCO to put together a scenario and describe a sequential response.

In the relief well plan itself, I believe that a different approach is warranted. ARCO has clearly presented the best case relief well drilling and well kill times. Listed below are changes that may make the timeline shown in figure 1 more realistic:

a. Utilize the 6-week mobilization time Canmar has listed in their letter for the Explorer II.

b. During drilling operations on both Hammerhead #1 and Corona, the drilling unit was off location for 10 days due to ice conditions. Additionally, Amoco, while drilling on Belcher, experienced 12 days down time due to ice. Given that ARCO's relief well would be drilled later in the season than the above referenced wells, I would expect a larger down time due to ice conditions. Additionally, Chevron, in the West Maktar Exploration Plan, indicated that 35 days were necessary to drill a relief well to 11,000 feet, plus 11 days to kill, plug and abandon the wells. Given this information, I expect it would take ARCO longer than 18 days to drill a precise directional well.

In short, I believe it would be to ARCO's advantage to include three timelines in the APD; best, worst, and expected cases.

Finally, ARCO references "master working agreements" with mud and major equipment companies. I believe it would be advantageous to include copies of such documents in the APD.

If you have any questions or require any further information concerning this APD, please contact Jim Regg at extension 6187 as I will be out of the office from July 24 to August 2, 1992. Separate Critical Operations and Curtailment Plan comments are being compiled by Mr. Jim Regg.

bcc: 866-6A
Chrons (area/dist/ora/cc)

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