

STATE OF ALASKA

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL & GAS

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**CERTIFIED MAIL
RETURN RECEIPT REQUESTED**

June 22, 2009

David J. Szabo
Head of Resource Management
Alaska Consolidated Team (ACT)
BP Exploration (Alaska) Inc
PO Box 196612
Anchorage, Alaska 99519-6612

RE: Northstar Unit Northstar Participating Area
Alternative Final Unit Tract Participations Approved

Dear Mr. Szabo:

Under the terms of the Northstar Unit Agreement (NSUA), Northstar final tract participation factors were due December 31, 2005. On October 6, 2005, the State of Alaska, Department of Natural Resources, Division of Oil and Gas (DNR and Division) approved a request from BPXA to defer the deadline for submission of the Northstar final tract participation factors for one year. The deadline was extended until two months following the fifth anniversary of Northstar production, or December 31, 2006. On October 13, 2006, DNR approved another request from BPXA to defer the deadline for submission of the Northstar final unit tract participation factors until two months after the sixth anniversary of initial production, or December 31, 2007. The U. S. Department of Interior, Minerals Management Service (MMS) approved deferrals to December 31, 2007, concurrent with DNR approvals.

On July 23, 2007, BP Exploration, (Alaska) Inc. (BPXA), as a Working Interest Owner (WIO) and the Operator of the Northstar Unit and on behalf of the only other WIO, Murphy Exploration Alaska Inc. (Murphy), requested a deferral of the deadline for submission of the final unit tract participation factors until nine months after the completion of the last of three unit wells (NS-33, NS-34, and NS-16A), that is no later than March 31, 2010.

By letter dated September 26, 2007, DNR denied BPXA's July request to defer submission of the Northstar final unit tract participation factors and notified the company that final unit tract participations would be due December 31, 2007.

By letter dated December 26, 2007, BPXA provided DNR and MMS with the Northstar Working Interest Owners' Proposed Northstar Final Unit Tract Allocation.

"Develop, Conserve, and Enhance Natural Resources for Present and Future Alaskans."

By letter dated January 7, 2008, DNR notified BPXA that its submission under Section 2.2.1 of Exhibit C-1 to the NSUA was incomplete and requested additional information.

By letter dated January 17, 2008, DNR notified BPXA that the additional information provided on January 15, 2008, completed its submission under Section 2.2.1 of Exhibit C-1 and revised the Final Tract Factor approval deadlines under Sections 2.2.2 and 2.2.3 of Exhibit C-1. By letter dated February 28, 2008, DNR, in consultation with MMS, revised the Final Tract Factor approval deadlines again.

By letter dated May 19, 2008, DNR rejected BPXA's proposed Northstar Participating Area Final Unit Tract Participation Factors and proposed alternative Northstar Participating Area Final Unit Tract Participation Factors. DNR requested BPXA provide written comments or objections concerning DNR's numbers by June 17, 2008.

By letter date May 27, 2008, the MMS notified BPXA that it did not concur with or approve DNR's proposed allocation factors and recommended approval of BPXA's December 26, 2007 "Final Unit Tract Participations".

The MMS expressed concern that the DNR's use of decline curve analysis to support its alternative Northstar Participating Area Final Unit Tract Participation Factors was technically inferior to a reservoir simulation model and inconsistent with the terms of the NSUA. MMS requested a meeting with DNR to discuss the issues prior to either one making a final decision on the tract participation factors.

DNR and MMS agreed to revise the schedule under Sections 2.2.2 and 2.2.3 of Exhibit C-1, to provide additional time for DNR and MMS to further evaluate and discuss BPXA's proposal in an effort to reach consensus. By letter dated June 16, 2008, DNR provided BPXA and MMS with a third schedule revision.

By letter dated September 2, 2008, DNR adopted a fourth schedule revision agreed to by all the parties to extend the time for the Joint Team¹ to recommend approval or rejection of BPXA's Proposed Final Unit Tract Participations under Section 2.2.2 of Exhibit C-1, to December 2, 2008.

By letter dated December 2, 2008, DNR advised BPXA that it had

evaluated BPXA's RMS static geologic model and found the model porosity distribution to be statistically different than the well data on the corresponding leases. The Division, through its consultant Petrotel, built its own static geologic model that used all of BPXA's petrophysical log interpretations, water saturation functions and structure surfaces. The distribution of porosity in the Division's geocellular model fits the well log porosity data better than the BPXA geocellular model. The Division's dynamic reservoir simulation was based on upscaling the geocellular model

¹ Under Section 1.2.2 of Exhibit C-1, the Joint Team is the Northstar Reservoir Modeling Team made up of MMS, DNR and the Alaska Oil and Gas Conservation Commission (AOGCC). AOGCC declined to participate on the modeling team for the Final Unit Tract Participations.

and used all of the reservoir parameters and field limits provided by BPXA in their presentations and discussions. The Division's dynamic model was a good history match at both the field and individual levels.

Because MMS did not accept the numbers generated by DNR's model, the Joint Team was unable to recommend approval or rejection of BPXA's Proposed Final Unit Tract Participations under Section 2.2.2 of Exhibit C-1. Under the revised schedule, MMS and Division had until March 2, 2009 to approve the Proposed Final Unit Tract Participations or alternative Final Unit Tract Participations.

On February 5, 2009, DNR hosted a meeting with representatives from BPXA and MMS for an overview presentation by PetroTel, DNR's consultant. DNR agreed to respond to questions submitted by MMS and BPXA. MMS submitted questions to DNR on February 10, 2009 and BPXA submitted its questions on February 17, 2009. As a result of PetroTel's work and travel commitments outside the country, DNR was unable to provide its answers to BPXA and MMS until April 28, 2009. As a result of this delay, DNR and MMS agreed to revise the schedule under Section 2.2.3 of Exhibit C-1, to June 15, 2009, to provide BPXA with time to respond to DNR.

By letter dated and faxed May 14, 2009, Murphy Oil responded to DNR. By letter dated May 14, 2009, BPXA responded to DNR.

Murphy Oil, citing Section 2.2.2 of Exhibit C-1, suggested that the Joint Team should either accept or reject the BPXA proposal. While Section 2.2.2 of Exhibit C-1 speaks to a Joint Team recommendation, it does not specifically set out what happens when MMS and DNR do not agree on whether to accept or reject BPXA's Proposed Final Unit Tract Participations. According to the agreed upon schedule under Section 2.2.2 of Exhibit C-1, DNR advised BPXA on December 2, 2008, that the Joint Team was unable to agree on whether to approve or reject BPXA's Proposed Final Unit Tract Participations. Nevertheless, because Section 2.3 of Exhibit C-1 requires MMS and DNR to make their best efforts to reach consensus and approve identical Final Unit Tract Participations, DNR recommended extending the date for the MMS' and DNR's Final Decisions under Section 2.2.3 of Exhibit C-1 to allow for additional time to discuss DNR's modeling results.

DNR made its best effort to reach consensus with the MMS. Because the Joint Team could not agree to either accept or reject BPXA's Proposed Final Unit Tract Participations, MMS and DNR are proceeding under Section 2.2.3 to approve Final Unit Tract Participations.

While Exhibit C-1 provides a process for DNR and MMS to evaluate the BPXA production simulation model, it does not preclude either party from independently evaluating the Northstar data. Exhibit C-1 preserves the independent authority of DNR and MMS to evaluate and approve redeterminations of Tract Participations. See September 4, 2002, Findings and Decision Approving the Northstar Participating Area.

Based on its review of BPXA's Northstar modeling, DNR questioned the porosity distribution. Because well log data by zone clearly indicated that the porosity was higher on state acreage, DNR expressed concern that the BPXA model did not reflect those differences. Instead, the BPXA model purports to have relatively similar porosity on both state and federal leases. The fundamental

disagreement that DNR has with BPXA's model is the distribution of porosity in the interwell region.

The process provided for in Section 4 of Exhibit C-1 for access to BPXA's production simulation model allows DNR and MMS to request production simulation runs with alternative factors. This process might have been sufficient had all the parties agreed on the static geologic model used to build the simulation model. Because the underlying disagreement with BPXA's modeling work is a result of the work done in the static model, no amount of effort producing simulation runs would address the porosity distribution issues that the DNR has with BPXA's model. As a result, DNR contracted with PetroTel to build a Northstar static and dynamic model.

BPXA challenges the state's technical work as "fundamentally technically flawed" and attributes modeling errors to PetroTel's work. BPXA asserts that PetroTel conditioned the reservoir model to separately average and manipulate porosities by State versus Federal acreage. BPXA goes on to conclude that PetroTel's model must then ignore: porosity variation by zone; different average porosities for different zones; and sampling bias and bias in the distribution of net reservoir pore volume introduced by simply averaging total logged feet when using data from highly deviated/horizontal wells that target a single zone as in the case of the Northstar wells.

BPXA's claims are unfounded. PetroTel did not condition the reservoir model to separately average and manipulate porosities by state versus federal acreage. Contrary to BPXA's assertion, PetroTel distributed porosity data by zone. The result is different average porosities for different zones. PetroTel's model used all of the data at fine scale from BPXA's porosity log (PHI_PP_comp) and distributed it using Sequential Gaussian Simulation. PetroTel then used cutoffs to determine net-to-gross in the model. On the other hand, BPXA distributed *net* porosity in the model rather than all the porosity data. By doing that, BPXA excluded data from the model. In evaluating BPXA's well log statistics in RMS, it appears that BPXA's 8 percent porosity cutoff was honored in all the wells on federal acreage. But for wells on state acreage it appears the minimum porosity is always less than 8 percent. Also troubling is the observation that the BPXA model does not reflect the net-to-gross found in the wells.

PetroTel extracted well log statistics from the model to illustrate its point that the BPXA model did not accurately reflect well log data. BPXA has yet to address the significance of the non-conformance between the log data and model volume porosity and focused on the use of statistics. However, the real issue remains--the well log zonal porosity in state wells is greater than the well log zonal porosity in federal wells. BPXA's model does not reflect that difference.

In an effort to address the issue about statistics, Division staff consulted with an independent expert in RMS--the geologic modeling software. The RMS consultant offered two significant observations. First, he recommended distributing all the log data rather than just distributing net data. Second, he recommended that NS-28 well be included in the statistics but that the horizontal portion of NS-14A well be excluded. Division staff ran the statistics excluding the horizontal portion of the NS-14A well, which resulted in the same statistics for average zone C-1 porosity.

Both BPXA's and PetroTel's models have the same Bulk Rock Volume and Oil Water Contact. The fundamental disagreement that DNR has with BPXA's model is the distribution of porosity.

The distribution of porosity impacts OOIP and therefore, in this very high net-to-gross reservoir, it impacts recovery. I find that, overall, the PetroTel model does a better job of honoring actual well data. The PetroTel model more accurately reflects local variations in the field and as a result, is more accurate in its predictions.

DNR's alternative Final Unit Tract Participations are as follows.

		Dynamic Model		
Lease		OOIP STB	OIP STB	Allocation Factor
Federal	Y1645	409,781	411,058	-0.0007
	YO179	6,569,057	2,851,239	2.0309
	YO181	43,003,779	16,701,881	14.3675
Federal Sub Total		49,982,617	19,964,177	16.3977
State	ADL312798	16,983,610	14,455,806	1.3808
	ADL312799	164,507,983	46,257,931	64.5946
	ADL312808	9,478,093	3,955,342	3.0168
	ADL312809	43,199,427	16,453,558	14.6100
State Sub Total		234,169,112	81,122,638	83.6023
Total		284,151,730	101,086,815	

DNR considered the criteria in 11 AAC 83.303 and finds that its alternative Final Unit Tract Participations will: 1) promote the conservation of natural resources; 2) promote the prevention of economic and physical waste; and 3) provide for the protection of all parties of interest, including the State. I find that, as a result of BPXA's distribution of porosity in their model, BPXA's Proposed Final Tract Participations do not equitably allocate production among the leases. I find the alternative Final Unit Tract Participations developed by PetroTel do equitably allocate production among the leases because its model does a better job of honoring the well data. Therefore, I approve the alternative Final Unit Tract Participations effective September 1, 2009.

Final Unit Tract Participation Adjustments are applied to Northstar Unit production according to the Equalization Procedures in Section 3.2 of Exhibit C-1. DNR and BPXA accounting staff have agreed on a plan to implement the State equalization procedures consistent with Section 3.2.1 as follows.

- New tract factors must be applied to all Northstar Unit production effective September 1, 2009.
- New tract factors must be applied retroactively to all Northstar production prior to September 1, 2009.
- BPXA shall provide DNR with a listing of total retroactive royalty-in-value (RIV) barrels that need to be transferred between MMS and DNR by September 21, 2009.
- The total retroactive RIV volume will be accounted for prospectively and evenly over one year of production during the period January 1, 2010 through December 31, 2010 – the payback period. The payback period is deferred to these dates to provide for 90 days advanced notice for royalty-in-kind nominations, consistent with Article 12.10 of the Northstar Unit Agreement.
- The total retroactive RIV volume shall be accounted for by modifying each lease's royalty percentage prospectively during the payback period.

MMS has advised DNR that it will approve the Proposed Final Unit Tract Participations submitted by BPXA. Section 2.3 of Exhibit C-1 provides a decision process in the event that MMS and DNR do not approve identical Final Unit Tract Participations. In that event, the Final Unit Tract Participation for each Unit Tract shall be a weighted average of the Final Unit Tract Participation approved by MMS and the Final Unit Tract Participation approved by the DNR (Averaged Final Unit Tract Participations). The averaged Final Unit Tract Participations shall be equal to:

(Final Unit Tract Participation approved by MMS X .15903) + (Final Unit Tract Participation approved by DNR X .84097). See Attachment 1 for Averaged Final Unit Tract Participations.

Within 45 days of this Decision, BPXA shall file Northstar Unit, Northstar Participating Area, Exhibit C, Final Unit Tract Participations and Exhibit E, Allocation of Participating Area Expenses.

A person affected by this decision may appeal it, in accordance with 11 AAC 02. Any appeal must be received within 20 calendar days after the date of "issuance" of this decision, as defined in 11 AAC 02.040 (c) and (d), and may be mailed or delivered to Tom Irwin, Commissioner, DNR, 550 W. 7th Avenue, Suite 1400, Anchorage, Alaska 99501; faxed to 1 -907-269-8918, or sent by electronic mail to dnr.appeals@alaska.gov. This decision takes effect immediately. An eligible

person must first appeal this decision in accordance with 11 AAC 02 before appealing this decision to Superior Court. A copy of 11 AAC 02 may be obtained from any regional information office of the Department of Natural Resources.

Sincerely,

A handwritten signature in blue ink, appearing to read "K. Banks".

Kevin R. Banks

Director

cc: Jeffrey Walker, MMS
RL Skillern, BPXA
James Stouffer, DOG
Nan Thompson, DOG
Julie Houle, DOG
Jeff Landry, DOL

Attachments: Attachment 1, Averaged Final Unit Tract Participations

Attachment 1
Northstar Averaged Final Unit Tract Participations

2007		BPX 2007			BPX 2007			BPX 2007			2008		
lease	OOIP, stb	Remaining OIP 15 yr, stb	Recovery, stb	Lease Recovery Factor, fraction	Tract Allocation	2007 PetroTel	2008 PetroTel	2008 PetroTel	2008 PetroTel	2008 PetroTel	2008 PetroTel	2008 PetroTel	
Y1645	940,732	829,948	110,784	11.8%	0.064%	Y1645	409,781	411,058	(1,277)	-0.3%	-0.001%	0.010%	
Y0179	7,537,655	2,847,706	4,689,949	62.2%	2.699%	Y0179	6,569,057	2,851,239	3,717,818	56.6%	2.031%	2.137%	
Y0181	48,689,067	16,500,806	32,188,261	66.1%	18.526%	Y0181	43,003,779	16,701,881	26,301,898	61.2%	14.368%	15.029%	
	57,167,454	20,178,460	36,988,994	64.7%	21.289%		49,982,617	19,964,177	30,018,440	60.1%	16.398%	17.176%	
ADL312798	14,683,978	10,864,088	3,819,890	26.0%	2.199%	ADL312798	16,983,610	14,455,806	2,527,804	14.9%	1.381%	1.511%	
ADL312799	141,309,067	36,339,858	104,969,209	74.3%	60.416%	ADL312799	164,507,983	46,257,931	118,250,052	71.9%	64.595%	63.930%	
ADL312808	9,989,456	4,069,307	5,920,149	59.3%	3.407%	ADL312808	9,478,093	3,955,342	5,522,751	58.3%	3.017%	3.079%	
ADL312809	36,780,537	14,735,039	22,045,498	59.9%	12.689%	ADL312809	43,199,427	16,453,558	26,745,869	61.9%	14.610%	14.304%	
	202,763,038	66,008,292	136,754,746	67.4%	78.711%		234,169,113	81,122,638	153,046,475	65.4%	83.602%	82.824%	
Totals	259,930,492	86,186,752	173,743,740	66.8%		Totals	284,151,730	101,086,815	183,064,915	64.4%			