

Conversation Contents

Joint Plan (USGS-BLM-BOEM) Response for Resource Assessment to Secretarial Order No. 3352

Attachments:

/4. Joint Plan (USGS-BLM-BOEM) Response for Resource Assessment to Secretarial Order No. 3352/1.1 Digital USGS Letterhead (Blank).docx
/4. Joint Plan (USGS-BLM-BOEM) Response for Resource Assessment to Secretarial Order No. 3352/1.2 GS17001063 USGS-BLM-BOEM assessment plan 6-22-17 RTC_KM sjc WG.docx

"Dueling, Kimberly Ann" <kdueling@usgs.gov>

From: "Dueling, Kimberly Ann" <kdueling@usgs.gov>
Sent: Mon Jun 26 2017 08:47:09 GMT-0600 (MDT)
To: William Lukas <wlukas@usgs.gov>
CC: Margo Harris <mrharris@usgs.gov>, Joanne Taylor <jctaylor@usgs.gov>, "Nowakowski, Judy" <jnowakowski@usgs.gov>, "Applegate, David" <applegate@usgs.gov>
Subject: Joint Plan (USGS-BLM-BOEM) Response for Resource Assessment to Secretarial Order No. 3352
Attachments: Digital USGS Letterhead (Blank).docx GS17001063 USGS-BLM-BOEM assessment plan 6-22-17 RTC_KM sjc WG.docx

Hi Bill,

Attached is digital USGS letterhead along with the Word Version of the document that Bill W. is requesting to sign while he is down there.

Thanks,

--

Kimberly Dueling
U.S. Geological Survey
Office of the Director

703-648-4407

"Lukas, William" <wlukas@usgs.gov>

From: "Lukas, William" <wlukas@usgs.gov>
Sent: Mon Jun 26 2017 10:08:40 GMT-0600 (MDT)
To: "Dueling, Kimberly Ann" <kdueling@usgs.gov>
Margo Harris <mrharris@usgs.gov>, Joanne Taylor

CC: <jctaylor@usgs.gov>, "Nowakowski, Judy"
<jnowakowski@usgs.gov>, "Applegate, David"
<applegate@usgs.gov>
Subject: Re: Joint Plan (USGS-BLM-BOEM) Response for Resource Assessment to Secretarial Order No. 3352

Memo printed on letterhead, signed by Bill Werkheiser and Scott Camereon. Now with ASLM (Rich Cardinale) for final disposition...

* * * * *
Bill Lukas | 202-208-4457
USGS Liaison to Water & Science
asws_liaison@usgs.gov

On Mon, Jun 26, 2017 at 10:47 AM, Dueling, Kimberly Ann <kdueling@usgs.gov> wrote:
Hi Bill,

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--
Kimberly Dueling
U.S. Geological Survey
Office of the Director

703-648-4407

"Dueling, Kimberly Ann" <kdueling@usgs.gov>

From: "Dueling, Kimberly Ann" <kdueling@usgs.gov>
Sent: Mon Jun 26 2017 10:10:28 GMT-0600 (MDT)
To: "Lukas, William" <wlukas@usgs.gov>
Margo Harris <mrharris@usgs.gov>, Joanne Taylor <jctaylor@usgs.gov>, "Nowakowski, Judy" <jnowakowski@usgs.gov>, "Applegate, David" <applegate@usgs.gov>
CC:
Subject: Re: Joint Plan (USGS-BLM-BOEM) Response for Resource Assessment to Secretarial Order No. 3352

Thanks Bill!!

On Mon, Jun 26, 2017 at 12:08 PM, Lukas, William <wlukas@usgs.gov> wrote:
Memo printed on letterhead, signed by Bill Werkheiser and Scott Camereon. Now with ASLM (Rich Cardinale) for final disposition...

* * * * *
Bill Lukas | 202-208-4457
USGS Liaison to Water & Science
asws_liaison@usgs.gov

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703-648-4407

--

Kimberly Dueling
U.S. Geological Survey
Office of the Director

703-648-4407



United States Department of the Interior
U.S. GEOLOGICAL SURVEY
12201 Sunrise Valley Drive
Reston, Virginia 20192

Memorandum

To: Vincent DeVito
Counselor to the Secretary for Energy Policy

Through: Katharine S. MacGregor
Acting Assistant Secretary, Land and Minerals Management

Scott J. Cameron
Acting Assistant Secretary for Water and Science

From: William H. Werkheiser
Acting Director, U.S. Geological Survey

Michael D. Nedd
Acting Director, Bureau of Land Management

Walter D. Cruickshank
Acting Director, Bureau of Ocean Energy Management

Subject: Joint Plan (USGS-BLM-BOEM) Response for Resource Assessment to
Secretarial Order No. 3352

EXECUTIVE SUMMARY

This memo responds to Secretary's Order No. 3352, which aims to jump-start energy production on the North Slope of Alaska. Specifically, this memo, which includes information from the United States Geological Survey (USGS), Bureau of Land Management (BLM) and Bureau of Ocean Energy Management (BOEM), discusses plans by which current resource assessments in the National Petroleum Reserve-Alaska (NPR-A) and the Section 1002 Area of the Arctic National Wildlife Refuge will be updated

The proposed resource assessments will be conducted using established USGS protocol and as transparently as permitted by non-disclosure agreements related to proprietary data. This work will be coordinated with and will involve Alaska technical agencies, including the Division of Geological and Geophysical Services, the Division of Oil and Gas, and the Alaska Oil and Gas Conservation Commission. The assessments include the following:

- NPR-A: A review of technical data has started, which includes 3-D seismic reflection data, exploration well data, and a large volume of ancillary data generated by ongoing

USGS research and data submitted to BLM by industry. Estimated completion is the end of Calendar Year (CY) 2017¹; total USGS costs are \$2.55 million.

- Arctic National Wildlife Refuge (ANWR) Scenario 1 – Assumes that existing vintage 2-D seismic data are not reprocessed; No updated assessment would be conducted because no new post-1998 data exist that compel a new assessment.
- ANWR Scenario 2 – Assumes that 1984-1985 2-D seismic data will be reprocessed; State-of-the-art industry reprocessing of this vintage data will be procured. Estimated completion is the end of 2018; total USGS costs are estimated to be \$4.85 million.
- ANWR Scenario 3 – Assumes that a new 3-D seismic survey is conducted (conducted and paid for by the private sector); A new 3-D seismic grid will aid interpretation and mapping, which will lead to updated play (assessment unit) definition. Estimated completion is the fourth quarter of 2019; total USGS costs are \$3.575 million. If the 3-D seismic survey is not completed during the winter of 2017-18, then completion will be delayed by one year (to the end of 2020). In that case, the Central North Slope assessment will be advanced by one year.
- Central North Slope: Relies heavily on the public release of tax-incentive 3-D seismic data by the Alaska Department of Natural Resources. Estimated completion is the end of 2020; total USGS costs are estimated to be \$6.4 million.
- West of NPR-A: This area, both onshore and beneath Alaska state waters, contains only sparse and very old (1970s vintage) 2-D seismic data. Unless new seismic data become available, existing data will be reviewed and interpreted. Estimated completion is the fourth quarter of 2021; estimated USGS costs are \$4.4 million.

Furthermore, BOEM anticipates completing a Beaufort Sea nearshore resource assessment by the end of September 2017, in sufficient time for findings to be incorporated into the USGS assessments.

BACKGROUND

On May 31, 2017, Secretary Zinke issued Secretary's Order No. 3352 (Order 3352) that, among other things, directs the Assistant Secretaries of Land and Minerals Management and Water and Science to submit a joint plan to the Counselor for Energy Policy for updating assessments of undiscovered, technically recoverable oil and natural gas resources of Alaska's North Slope, focusing on Federal lands, including the NPR-A and the Section 1002 Area of the Arctic National Wildlife Refuge (ANWR). Specifically, Section 4 b of Order 3352 states:

Within 21 days of the issuance of this Order, the Assistant Secretary – Land and Minerals Management and the Assistant Secretary – Water and Science shall submit to the Counselor to the Secretary for Energy Policy a joint plan for updating current assessments of undiscovered, technically recoverable oil and natural gas resources of Alaska's North Slope, focusing on Federal lands including the NPR-A and the Section 1002 Area [of the Arctic National Wildlife Refuge]. The joint plan shall include consideration of new geological and geophysical data that has become available since

¹ All references to completion dates are based on the calendar year.

the last assessments, as well as potential for reprocessing existing geological and geophysical data.

The effort to update the current resource assessments in the NPR-A and the Section 1002 Area of ANWR is currently underway and led by the USGS in close coordination with the BLM and BOEM. The new resource assessments will replace the 2010 NPR-A and 1998 1002 Area USGS petroleum resource assessments. An estimate of more favorable hydrocarbon resources could increase the level of interest in leasing in these areas.

The BLM will provide institutional knowledge and geologic data that will be useful to the USGS while comparing and evaluating existing information about the NPR-A and the 1002 Area to produce a public report to estimate undiscovered, technically recoverable oil and gas resources. The BLM has the data from numerous geophysical surveys conducted throughout NPR-A, including from some high potential areas that are currently unavailable for leasing. Geophysical data for the 1002 Area is more limited; the last geophysical survey was conducted in 1984-85. The BLM will provide a technical review of the draft assessment report.

PROPOSED ASSESSMENTS

The assessments directed by Section 4 b of Order 3352 will be conducted using established USGS protocols. The assessments will involve public review meetings in Anchorage, Houston and other locations, as appropriate, to foster “buy-in” and support for assessment results from State agencies and the oil industry. The assessment results will be incorporated into non-technical fact sheets summarizing results and technical reports that reflect the geological science that forms the foundation of the assessment. These documents will be submitted to USGS technical and editorial review as required by USGS Science Integrity Policy.

Proprietary industry geologic and geophysical data held by BOEM is unlicensed to the USGS. These data (subject to appropriate non-disclosure agreements) will be available for analysis and interpretation in Anchorage at the BLM-Alaska State Office and the BOEM-Alaska Regional Office. Any new geophysical and geological data acquired (seismic reflection, non-Federal well data, etc.) not currently available (i.e., proprietary State of Alaska data) will be shared between the three bureaus for the purpose of this analysis. BOEM is researching the availability and cost of the Smith Bay portion of the BLM 3D dataset pertinent to the assessment of the Caelus discovery. Finally, BOEM, in conjunction with BLM, will pursue the acquisition of the Alaska state portion of the NPRA 3-D dataset collected in Smith Bay. This seismic data is vital in analyzing the possible geological impact on resources from the Caelus discovery. The cost to purchase the Smith 3D data is currently unknown.

As this work will be carried out jointly by USGS, BLM and BOEM, it is imperative that the bureaus conduct a consistent analysis between onshore and offshore resources, subject to rigorous statistical analysis and supportable probabilistic results.

The total USGS costs for each assessment by Fiscal Year are included in Table 1 below. Detailed plans and timelines for conducting various North Slope assessments are discussed more fully below.

Table 1: USGS cost information, Alaska North Slope Assessment Options (numbers in millions of dollars)

Assessment	FY17	FY18	FY19	FY20	FY21	FY22	Total
National Petroleum Reserve – Alaska	1.600	0.950	0.000	0.000	0.000	0.000	2.550
Arctic National Wildlife Refuge							
ANWR – Option 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ANWR – Option 2	1.350	2.550	0.950	0.000	0.000	0.000	4.850
ANWR – Option 3	0.000	0.375	2.250	0.950	0.000	0.000	3.575
Central North Slope	0.000	0.000	3.250	2.200	0.950	0.000	6.400
West of NPRA	0.000	0.000	0.000	1.250	2.400	0.750	4.400

Note: Totals not provided due to range of assessment scenarios provided

National Petroleum Reserve – Alaska (NPR-A)

Review of technical data has started and involves personnel from the USGS, BOEM and BLM. The data currently under review includes 3-D seismic reflection data, exploration well data, and a large volume of ancillary data generated by ongoing USGS research and data submitted to the BLM by industry. BOEM staff and resources will be available for assessing the oil and gas potential of NPR-A and the 1002 area of ANWR.

BOEM geologists and geophysicists have analyzed the geologic and geophysical data for all sales in the NPR-A, starting with the 1999 sale through the most recent sale in 2016, and USGS has conducted research on all rock units to be evaluated. In addition, BOEM has access to all BLM seismic and well information as it becomes available. BOEM has also assessed the resource potential of adjacent Outer Continental Shelf (OCS) offshore of NPR-A and ANWR. Re-examining the geologic settings of both the onshore and offshore areas will enhance our understanding of the oil and gas potential of the Alaska North Slope.

Accordingly, the first three tasks of the workflow will consist of a review of all data and analyses by an integrated team of USGS, BLM and BOEM personnel with the goal of reaching consensus on the plays to be assessed and risk structure to be imposed on the assessment. This team will determine the geologic risk of plays and assessment units to ensure resources are consistently evaluated, especially where geologic plays extend from onshore to offshore. The USGS, BOEM, BLM and other government experts will review geologic play risks for consistency. We anticipate this step can be completed late in the third quarter of 2017.

BOEM scientists will also assess the Beaufort OCS potential as might be influenced by new discoveries onshore. The BOEM will also revise the resource assessment of two existing plays equivalent to the Torok and Nanushuk Formations in the Beaufort Sea. The BOEM anticipates completing the Beaufort Sea nearshore assessment by the end of September 2017, and in sufficient time to be incorporated into the updated NPR-A assessment due at the end of 2017.

Public review meetings and the USGS assessment will be held during the fourth quarter of 2017, and results could be released late in the fourth quarter of 2017. Total USGS costs are estimated at \$2.55 million; a timeline of assessment tasks is included in Figure 2. Included in these costs is \$500,000 dedicated to the Alaska Department of Natural Resources to conduct analytical services in support of the NPR-A resource assessment.

Figure 2: Estimated completion timeline for NPR-A Resource Assessment

Task	CY 2017				CY 2018				CY 2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Review technical data and interpret seismic data		■										
Refine interpretations of seismic and well data			■									
Define AUs; prepare for public review & assessment				■								
Conduct public review meetings				■								
Conduct assessment				■								
Prepare release document (fact sheet)				■								
Conduct technical and editorial review				■								
Release assessment				■								
Hold briefings for Admin., Congress, State et al.				■								

Arctic National Wildlife Refuge 1002 Area

Three ANWR 1002 Area assessment scenarios are considered, which are detailed below:

- Scenario 1: Assumes that existing vintage 2-D seismic data are not reprocessed. No updated assessment would be conducted because no new post-1998 data exist that would compel the USGS to consider conducting a new assessment.
- Scenario 2: Assumes that the 1984-1985 2-D seismic data will be reprocessed (not procured or managed by USGS). The timeline for this scenario includes procurement of state-of-the-art industry

reprocessing of the vintage data during the fourth quarter of 2017, and reprocessing of the vintage data during late in the fourth quarter of 2017 through early in the second quarter of 2018 (the seismic company that collected original data estimates six months for reprocessing). The BLM will work with the USGS regarding the reprocessing of existing geological and geophysical data of the 1002 Area and will assist as required in the collection of any additional seismic data collected on onshore Federal mineral estate. USGS and BOEM scientists would make multiple visits to the company conducting the reprocessing to provide interactive geological constraints to assure optimal results.

During the reprocessing, new data will be collected from well samples adjacent to the 1002 Area and from outcrop samples collected during a short field season in 2017. These data will include constraints on oil source-rock quality, uplift and exhumation history, and reservoir-rock quality. The USGS recommends collection of an airborne gravity gradiometry survey across the 1002 Area pending sufficient funds, but neither procurement nor interpretation of such a survey are included in the USGS budget.

After reprocessed seismic data are delivered, a team of USGS and BOEM scientists will interpret the data, produce maps, and define plays (assessment units) to be evaluated. These tasks are estimated to be completed during the first through third quarters of 2018. This schedule will allow public review meetings to be held during that same period, and the assessment and technical review of release materials during the fourth quarter of 2018. Public release of results is planned for late in the fourth quarter of 2018.

Total USGS costs are estimated at \$4.85 million over three fiscal years, and a timeline of assessment tasks is included in Figure 3 below. Included in these costs is \$750,000 dedicated to the Alaska Department of Natural Resources to conduct tasks associated with analytical services in support of the ANWR 1002 Area assessment.

Figure 3: Estimated completion timeline for ANWR Resource Assessment (Scenario 2)

Task	CY 2017				CY 2018				CY 2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Seismic data reprocessing (existing 2-D data) *				■	■							
Review technical data and interpret seismic data					■	■						
Refine interpretations of seismic and well data							■	■				
Define AUs; prepare for public review & assessment							■	■				
Conduct public review meetings								■				

Figure 4: Estimated completion timeline for ANWR Resource Assessment (Scenario 3)

Task	CY 2017				CY 2018				CY 2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
3-D seismic survey and processing of data *				[Orange bar spanning 4Q 2017 to 3Q 2018]								
Review technical data and interpret seismic data						[Blue bar spanning 3Q 2018 to 2Q 2019]						
Refine interpretations of seismic and well data									[Blue bar spanning 1Q 2019 to 2Q 2019]			
Define AUs; prepare for public review & assessment										[Blue bar spanning 2Q 2019 to 3Q 2019]		
Conduct public review meetings											[Blue bar spanning 3Q 2019 to 4Q 2019]	
Conduct assessment												[Blue bar in 4Q 2019]
Prepare release document (fact sheet)												[Blue bar in 4Q 2019]
Conduct technical and editorial review												[Blue bar in 4Q 2019]
Release assessment												[Blue bar in 4Q 2019]
Hold briefings for Admin., Congress, State, et al.												[Blue bar in 4Q 2019]

* USGS plays no role in designing or acquiring a 3-D seismic survey

Central North Slope

Assessment of the Central North Slope will rely heavily on the public release of tax-incentive 3-D seismic reflection data by the Alaska Department of Natural Resources. Assuming that several of these data sets are released before or during the second quarter of 2018, and that funding is available for the USGS to license other 3-D and 2-D seismic data, an assessment likely can be completed by the end of 2020. As no Federal lands are involved in this assessment, much or all of the technical analyses will be completed by USGS scientists, with the expectation that BOEM and BLM scientists will provide technical review of the interpretations. Alaska state agencies will be invited to collaborate on data interpretation and play (assessment unit) definition.

If the ANWR 1002 Area 3-D seismic survey is not completed during the winter of 2017-2018, the timeline in Figure 4 will be advanced by one year. In that case, the workflow for assessment of the Central North Slope will commence during third or fourth quarter of 2018.

Total USGS costs are estimated at \$6.4 million. Included in these costs is \$400,000 dedicated to the Alaska Department of Natural Resources to collaborate in field work and ancillary analytical tasks.

West of NPR-A

The area west of the NPR-A, both onshore and beneath Alaska state waters, contains only sparse and very old (1970s vintage) 2-D seismic data. Workflow for this assessment will include review with BOEM of seismic data in the Chukchi Sea to evaluate the extent to which those data may inform the geology of the onshore and state waters. Unless new seismic data become available, we anticipate that existing data can be reviewed and interpreted, and that an assessment can be conducted between the third quarter of 2020 and fourth quarter of 2021. We anticipate that much or all of the technical analyses will be completed by USGS scientists with the expectation that BOEM and BLM scientists will provide technical review of the interpretations. As much of the onshore area consists of Native lands, the USGS will invite the Arctic Slope Regional Corporation to also provide a technical review of USGS's work.

Total USGS costs are estimated at \$4.4 million. Included in these costs is \$200,000 dedicated to the Alaska Department of Natural Resources to collaborate in field work and ancillary analytical tasks.

Budget Strategy for Funding the Work

Given that we are presently about to enter the fourth quarter of FY 2017, it will be very challenging to be able to obligate USGS FY17 funding in FY 2017 to begin this work. USGS indicates that it has approximately \$100,000 in uncommitted FY 2017 resources to start work. They believe that the nature of the work, given the Alaska field season, that could be accomplished over the balance of FY 2017 represents about \$825,000. Additional funds beyond the \$100,000 (namely \$725,000) would need to be identified for redirection from elsewhere in the USGS enacted budget. As a practical matter, this late in the fiscal year we would need to find available grant funds from another program, or money that was intended for a contract that could be redirected for this purpose.

However, the reprogramming rules imposed by the Appropriations Committee in this instance would seem to require that a shift of more than \$150,000 into this line item would require a formal reprogramming request. The process for a reprogramming would require USGS to identify another program within its budget to be the donor of funds, the Departmental Budget Office would then need to submit a reprogramming request to the Office of Management and Budget for approval, and then the reprogramming would need to sit with the House and Senate Interior Appropriations Subcommittees for up to 30 days, unless the committees chose to approve it sooner. The thirty day clock might realistically run out by the middle of August. Finally, once we got approval in mid-August we would need a method for obligating the \$825,000 in the six weeks before the end of the fiscal year, assuming the funds to be used were one-year money that would expire September 30, 2017.

The fastest way to obligate funds would be by adding a new task order onto an existing contract whose scope of work was broad enough to accommodate the new work, or through

an existing cooperative agreement with a state or university. USGS will explore an appropriate funding vehicle.

Note that we could also accept contributed funds from non-federal parties to support this work, which presumably would not be subject to the Hill's reprogramming guidelines. That assumption also needs to be validated.

BLM and FWS have indicated they do not have available FY 2017 funds to support this work.

Bottom line, only \$825,000 in federal funds of the possible \$2,950,000 shown in Table 1 could plausibly be obligated this year. Assuming no non-federal funds were available, the balance of \$2,125,000 would need to be obligated in FY 2018. USGS would need to evaluate whether obligating that money in FY2018 instead of FY 2017 would push the overall schedule for the work a bit further into the future.

Conversation Contents

Re: north slope plan

Judy Nowakowski <jnowakowski@usgs.gov>

From: Judy Nowakowski <jnowakowski@usgs.gov>
Sent: Thu Jun 22 2017 16:11:27 GMT-0600 (MDT)
To: "Hitzman, Murray" <mhitzman@usgs.gov>, David Applegate <applegate@usgs.gov>
CC: William Werkheiser <whwerkhe@usgs.gov>, Walter Guidroz <wguidroz@usgs.gov>
Subject: Re: north slope plan

sorry Dave! On Jun 22, 2017, at 6:10 PM, Judy Nowakowski <jnowakowski@usgs.gov> wrote: Hi Murray, good way to handle it, thanks! Bill/Dave: please let us know if you have any questions/comments tomorrow, toward Murray letting Rich know whether he can consider this version cleared by us. Thanks! On Jun 22, 2017, at 6:02 PM, Hitzman, Murray <mhitzman@usgs.gov> wrote: Bill and Judy you will see from email just sent that I gave to Richard Cardinale and Scott the integrated plan for resource assessments. It is labelled draft. This is a condensation of the report you reviewed and submitted last week to Vincent DeVito. Richard called up about 30 minutes ago and really wanted to get this as we are just beyond the 21 day limit (from May 31) to get the report to the Secretary. I went to look for both of you but you were (wisely) not there. Hope this is OK. -- Murray W. Hitzman U. S. Geological Survey Associate Director - Energy and Minerals 12201 Sunrise Valley Dr., MS 102 Reston, VA. 20192 703-648-4576

"Applegate, David" <applegate@usgs.gov>

From: "Applegate, David" <applegate@usgs.gov>
Sent: Thu Jun 22 2017 22:57:02 GMT-0600 (MDT)
To: Judy Nowakowski <jnowakowski@usgs.gov>
Subject: Re: north slope plan

Thanks, Judy. Will review on my morning subway ride...

David Applegate, Ph.D.
Acting Deputy Director
U.S. Geological Survey
12201 Sunrise Valley Drive MS 111, Reston VA 20192
703 648 6600 voice, 703 648 7031 fax
applegate@usgs.gov

On Thu, Jun 22, 2017 at 6:11 PM, Judy Nowakowski <jnowakowski@usgs.gov> wrote:
| sorry Dave!

| On Jun 22, 2017, at 6:10 PM, Judy Nowakowski <jnowakowski@usgs.gov> wrote:

Hi Murray, good way to handle it, thanks!

Bill/Dave: please let us know if you have any questions/comments tomorrow, toward Murray letting Rich know whether he can consider this version cleared by us. Thanks!

On Jun 22, 2017, at 6:02 PM, Hitzman, Murray <mhitzman@usgs.gov> wrote:

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Associate Director - Energy and Minerals
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