Cook Inlet Gas Study - 2012 Update

prepared for

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Due to the uncertainties of drilling and producing activities of operating and exploration companies and Alaska state agencies in influencing drilling activities, this study should be considered a best estimate at present with the current data available. It was prepared using generally accepted engineering predictive methods.
As such, Petrotechnical Resources of Alaska can make no warranty as to the actual future performance of the Cook Inlet gas production.

Executive Summary

Petrotechnical Resources of Alaska (PRA) was asked to update gas supply and demand forecasts of the March, 2010 report entitled "Cook Inlet Gas Study – An Analysis for Meeting the Natural Gas Needs of Cook Inlet Utility Customers".

The results of the 2010 Study identified that Cook Inlet producers needed to drill 13.6 wells per year with an average production rate of 3.1 MMCF/D per well for an annual increased production rate of 42.2 MMCF/D to meet forecasted Cook Inlet demand.

The following results (see section II, 2012 Cook Inlet Supply Forecast) have been documented to compare the target with actual results:

- In 2010, producers completed 5 gas wells with an average production rate of 3.7 MMCF/D for total increased production of 18.5 MMCF/D

- In 2011, producers completed 7 wells with an average production rate of 1.8 MMCF/D for total increased production of 12.3 MMCF/D

- Through June, 2012, producers completed 4 gas wells with an average production rate of 5.4 MMCF/D for total increased production of 21.5 MMCF/D

Although tax incentives and an improved regulatory process appears to be working (see section IV, New Developments), new production is simply not outpacing natural field decline.

In three years, Cook Inlet producers have not completed the amount of gas wells estimated in the 2010 PRA report to avoid gas shortages. Based on the current 2012 supply/demand analysis, new wells will have to add ~31 MMCF/D of new production per year for 2013-2019 to avoid shortfalls prior to 2020, which suggests that Cook Inlet Producers need to increase production 2 to 3 times greater than current trends. If this new production is not added, utilities will be in short supply as early as 2014 or 2015 (see Section III, Timing of Supply Shortfall); therefore, supplemental supply/alternative resources will be required within the next two to three years.

<u>Prior PRA Findings 2010-2011</u>

In its 2010 Study, PRA generally found that Cook Inlet featured declining gas reserves and decreasing production, especially when compared with the pace of development in 2007-2009. Specifically, PRA found the following:

- Based on the then-existing producing fields in Cook Inlet and the then-current forecasted demand, there would be a critical shortage of natural gas supply starting in 2013.
- If drilling activity remained at the 13.6 wells completed per year level that occurred during 2007-mid 2009, the shortage of gas would occur after 2018.
- To meet demand through 2020, a total of 185 wells would have to be drilled.
- The limited remaining development reserves in Cook Inlet and the long lead time required to bring new discoveries on-line, combined with the paucity of true gas exploration in recent years, meant that it was likely that a source of gas outside of

the Cook Inlet, such as LNG importation or other in-state reserves, would be required starting between 2013 and 2016.
- In order for Cook Inlet gas requirements to be met, either by additional development of Cook Inlet gas or gas imported as LNG or from other areas of the state, adequate gas storage would be required to meet the winter deliverability swings.

PRA's November, 2010 Cook Inlet Gas Drilling Update included the following findings:
- In the twelve months from November 2009 through October 2010, drilling and permitting activity showed eight (8) net wells (ten (10) wells permitted and two (2) previously permitted wells cancelled).
- Over this twelve month period, five (5) wells were completed that averaged 3.7 MMSCF/D per well for their first six months of production.

PRA's November, 2011 Cook Inlet Gas Drilling Update included the following findings:
- From November 2010 through October 2011, the drilling and permitting activity showed eight (8) new wells.
- There had been three (3) apparent exploration discoveries from November 2010 through October 2011; the Kenai Loop Unit, the Shadura No. 1 and the offshore Kitchen Lights Unit.
    - Proven reserves were announced in the Kenai Loop well, the gas had been contracted, and development facilities were being constructed for gas sales in 2012.
    - The Shadura prospect was being permitted for development but there had not been announced estimates of reserves. Additional testing was planned prior to sizing production equipment. The earliest testing and delineation would be permitted was the winter of 2012-13.
    - There was some uncertainty around the announced Kitchen Lights discovery. It was an offshore development and would likely take several years to delineate and develop.
- The recently completed six (6) wells that had reported production averaged 1.65 MMSCF/D per well for their first six months of production.

<u>PRA 2012 Update Report Findings</u>

This Cook Inlet Gas Study - 2012 Update indicates that there will be a Cook Inlet supply shortfall as early as 2014 with production from current fields only. A shortfall, where demand exceeds supply, has been consistently projected in prior studies.

There were four wells completed as Cook Inlet gas wells between November 2011 and June 2012 that averaged 5.4 MMSCF/D for their first six months of production. These new wells were included in the 2012 supply forecast.

Figure 1 shows a comparison of projected demand compared to supply forecast from the wells of existing fields with no further Cook Inlet gas well development. Under this scenario, demand exceeds supply in 2014.

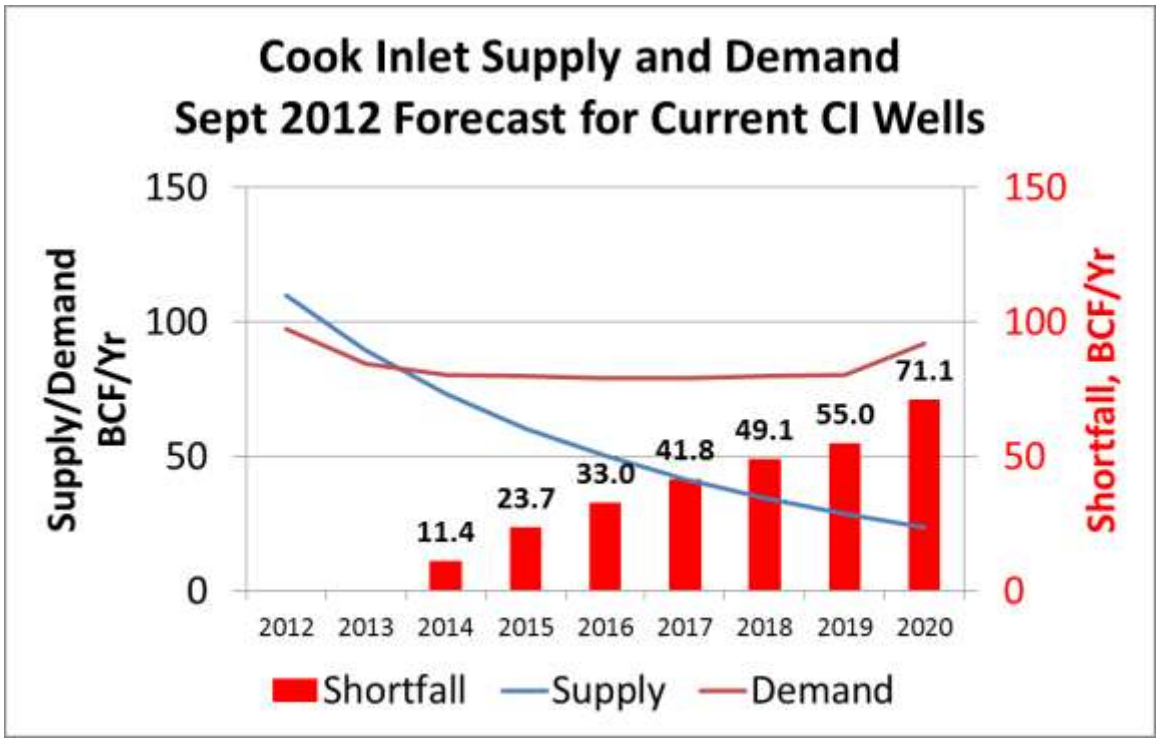

Figure 1: 2012 Cook Inlet Supply/Demand & Shortfall from Current Cook Inlet Wells

In the 2010 Study, a no-development scenario supply forecast predicted a shortfall as early as 2013. Because additional wells and compression were added, the shortfall forecast with no further development is now predicted in 2014.

The timing of future development is uncertain. Scenarios assuming 10 MMSCF/D and 20 MMSCF/D added per year from future Cook Inlet developments were used to evaluate the sensitivity of the forecast. The sensitivity scenarios were based on results of the actual development and assumed a decline for new production of 15% per year.

Table 1 shows a summary of the scenarios investigated in the 2012 Update. If there is no drilling activity to add new production in Cook Inlet, a shortfall occurs as early at 2014. Even if there is a robust level of activity that annually adds 20 MMSCF/D of new gas to the Cook Inlet supply, a shortfall is still predicted to occur in as early as 2015.

Scenario	Initial Year of Shortfall	Initial Year Shortfall Amount, BCF
Existing Cook Inlet Fields	2014	11.4
Existing Fields + Annual Addition of 10 MMSCF/D Production from New Wells 2013-2019	2014	5.1
Existing Fields + Annual Addition of 20 MMSCF/D Production from New Wells 2013-2019	2015	6.2

Table 1: 2012 Cook Inlet Gas Supply Scenarios

If there are no large discoveries made that can be brought to production within 1-2 years, it is likely the current pace of drilling activity will result in a shortfall in Cook Inlet gas supply as early as 2014 or 2015. A scenario using annual new production additions of 20 MMSCF/D from development drilling estimates a shortfall occurring in 2015, which is in line with recent development levels and planned developments at existing and recently discovered fields.

Figure 3 shows recent history and future wells estimated to meet CI gas demands through 2020. The well count assumes average well performance of 2007-2009 wells, with initial rates, and developed reserves degraded by 4.3% per year.

This 2012 Update concludes:

- With the pace of current development, absent a major gas discovery that can be available to utilities in less than two (2) years, a shortage of Cook Inlet natural gas supply will occur by 2015.
- If 31 MMSCF/D of new production is added each year from new completions 2013-2019, a shortfall will be avoided.
- It is estimated that 157 new gas completions are required to meet demand through 2020.
- The most likely sources of new production in Cook Inlet would be from existing fields such as Beluga River Unit and Trading Bay Unit or development of recent discoveries such as Kenai Loop and Shadura or possible successes at Otter, Tiger Eye or the Apache Tyonek well.
- Any major new gas discoveries from offshore exploration are not likely to be brought on production within 3-5 years due to permitting, planning and construction of offshore facilities and pipelines.

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Introduction

In March 2010, PRA completed the "Cook Inlet Gas Study – An Analysis for Meeting the Natural Gas Needs of Cook Inlet Utility Customers" that was commissioned in 2009 for ENSTAR Natural Gas Company, Chugach Electric Association and Municipal Light & Power.

The March 2010 report was based on AOGCC production data available for Cook Inlet wells through October 2009.

The 2010 Study concluded that:

- With existing producing fields in Cook Inlet and the current forecasted demand, there will be a critical shortage of natural gas supply starting in 2013.
- If drilling activity remains at the 13.6 wells completed per year level that occurred during 2007-mid 2009, the shortage of gas will occur after 2018. The most recent unit POD's showed 12 wells to be drilled in the POD period, although statements by gas producers at recent Cook Inlet's oil and gas industry forum would indicate that continuation at this level of activity is not likely.
- To meet demand through 2020, a total of 185 wells will be required to be drilled at an estimated total cost of $1.8 to $2.8 billion.
- Given the limited remaining development reserves in Cook Inlet and the long timeframe required to bring new discoveries on-line, further combined with the paucity of true gas exploration in recent years, it is likely that a source of gas outside of the Cook Inlet, such as LNG importation or other in-state reserves, will be required starting between 2013 and 2016.
- In order for Cook Inlet gas requirements to be met, either by additional development of Cook Inlet gas or gas imported as LNG or from other areas of the state, adequate gas storage will be required to meet the winter deliverability swings.

There have been 2 reviews of gas well drilling activity in Cook Inlet that showed Cook Inlet development pace was much lower than experienced in 2007-2009.

- In the November, 2010 Cook Inlet Gas Drilling Update, it was found that:
    - The twelve month drilling and permitting activity showed eight net wells (ten wells permitted and two previously permitted wells cancelled) over the twelve month period from Nov-2009 through Oct-2010.
    - Over this twelve month period there were five wells completed that averaged 3.7 MMSCF/D per well for their first six months of production.
- In November, 2011 Cook Inlet Gas Drilling Update, it was found that:
    - The twelve month drilling and permitting activity showed eight new wells over the twelve month period from Nov-2010 through Oct-2011.
    - There have been 3 apparent exploration discoveries in the last year; the Kenai Loop Unit, the Shadura No. 1 and the offshore Kitchen Lights Unit.
    - The Kenai Loop has a certified proven reserve announced and the gas has been contracted and development facilities are being constructed for gas sales in 2012.
    - While the Shadura prospect is being permitted for development, there have been no announced estimates of reserves and additional testing is planned prior to sizing production equipment. The earliest testing and delineation will be permitted is the winter of 2012-13.

- There is some question about the veracity of the announced Kitchen Lights discovery and as it is an offshore development, it will likely take several years to delineate and develop.
- The recently completed six wells that have reported production averaged 1.65 MMSCF/D per well for their first six months of production.

The 2012 Update of Cook Inlet Supply and Demand was undertaken as follows:

I. 2012 Cook Inlet Demand Forecast
II. 2012 Cook Inlet Supply Forecast
III. Timing of Supply Shortfall with Current Cook Inlet Fields
IV. Potential New Developments
V. Future Production Scenarios
VI. Conclusion

Production and Forecast of Field and Well Decline Curves are presented in the Appendix.

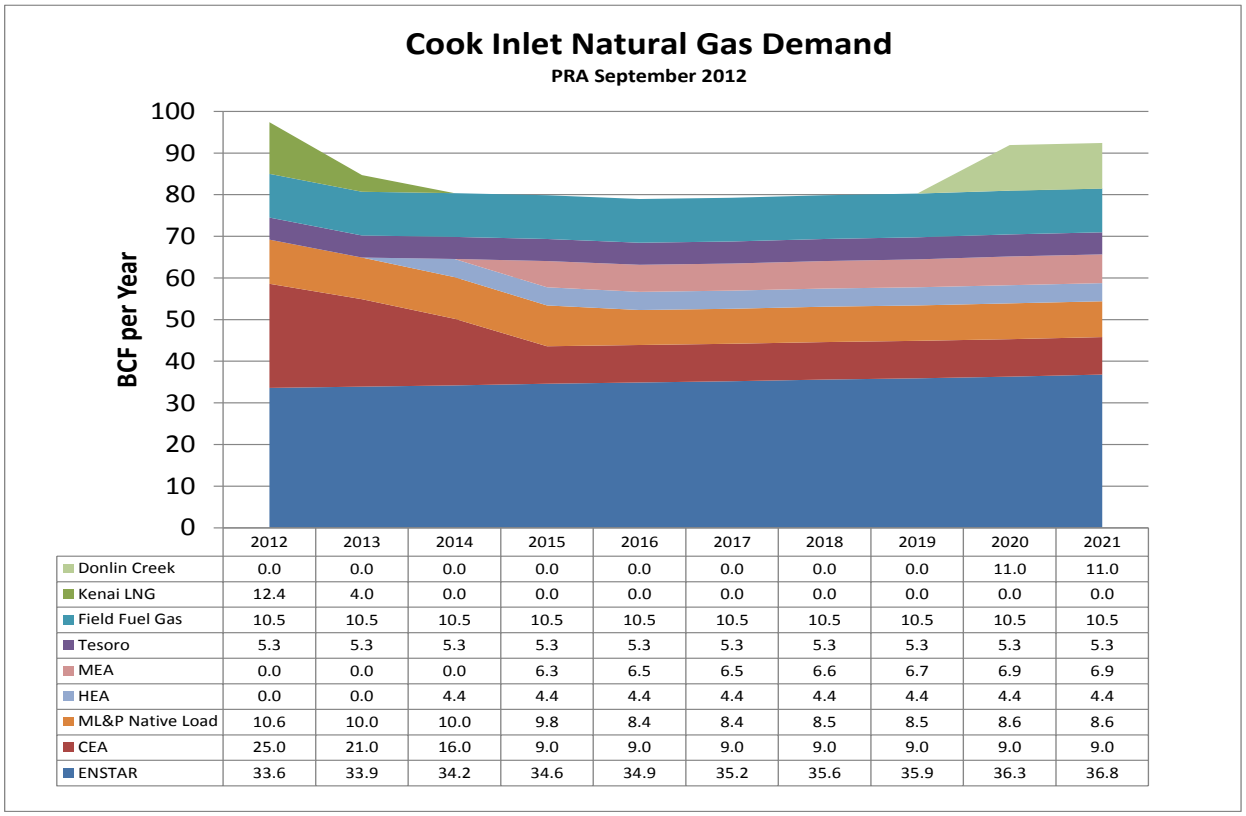
I. 2012 Cook Inlet Demand Forecast

The demand forecast for the Cook Inlet Basin is shown in Figure 2. It is based on input from the following Cook Inlet current and future gas users:

- ENSTAR Natural Gas
- Chugach Electric Association
- Municipal Light & Power
- Homer Electrical Association
- Matanuska Electrical Association
- Donlin Creek Mine

Cook Inlet demand has changed slightly over the last few years with a reduction in utility gas demand from more efficient electric generation (7.5 BCF/year or 9.4% reduction), the addition of wind power (0.35 BCF/year or 0.4% reduction), and with a projected increase in industrial demand in 2020 (Donlin Creek Mine). The current demand forecast for the Cook Inlet Basin is shown below in Figure 2.

Cook Inlet Field usage is based on the 2011 AOGCC record of fuel, flare and shrinkage for Cook Inlet fields. Tesoro fuel use is from testimony during the LNG license extension (Tesoro FERC 4/09/07).



	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Donlin Creek	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0	11.0
Kenai LNG	12.4	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Field Fuel Gas	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5
Tesoro	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
MEA	0.0	0.0	0.0	6.3	6.5	6.5	6.6	6.7	6.9	6.9
HEA	0.0	0.0	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
ML&P Native Load	10.6	10.0	10.0	9.8	8.4	8.4	8.5	8.5	8.6	8.6
CEA	25.0	21.0	16.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
ENSTAR	33.6	33.9	34.2	34.6	34.9	35.2	35.6	35.9	36.3	36.8

Figure 2: Forecasted Annual Demand for Cook Inlet Gas

Figure 3 shows the Cook Inlet demand forecasted in the 2010 Study in comparison to this 2012 Update. In general, the 2012 forecast is lower, although Donlin Creek Mine is a new addition in the 2012 Update and is projected to start up in 2020.

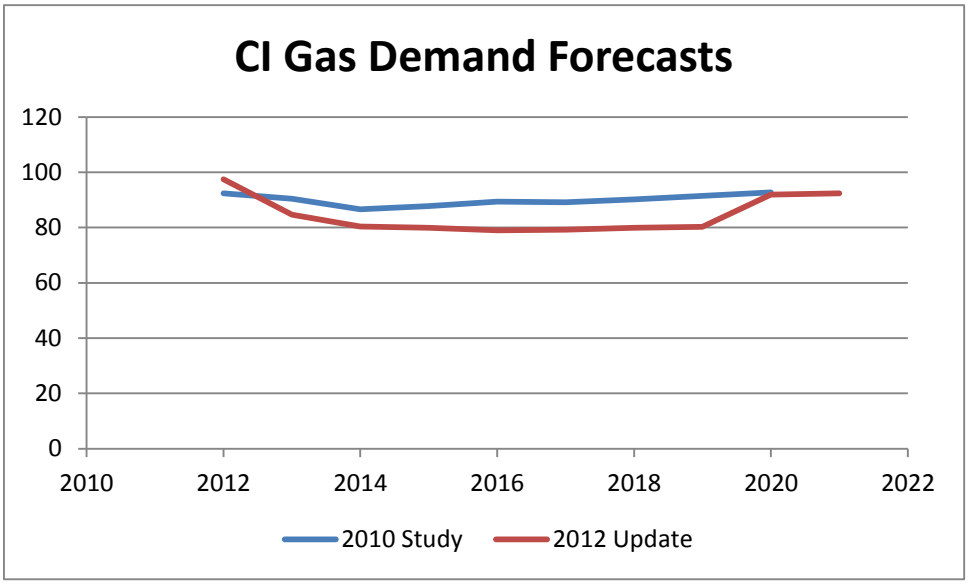


Figure 3: Comparison of Cook Inlet Demand 2010 Study v. 2012 Update

II. 2012 Cook Inlet Supply Forecast

PRA evaluated existing production declines and made a future production forecast for the major units in the Cook Inlet Basin.

Larger producing units, and those that had recent development activity, were analyzed on a well-by-well basis and the unit total was the sum of the individual wells. The following units were analyzed by individual wells and those cumulative results are shown below:

	2012 Predicted Average Rate, MMSCF/D	Predicted Annual Decline	Remaining BCF as of 1/1/12
Beluga River Unit	87.4	18%	188.7
Kenai Unit	29.0	21%	48.5
Kenai Loop	4.3	25%	10.8
Ninilchik Unit	31.2	26%	43.2
North Cook Inlet Unit	36.9	17%	85.3
North Fork Unit	4.0	25%	4.6
Trading Bay Unit	57.6	23%	91.3

Units with future production are predicted on a unit total basis and results are as follows:

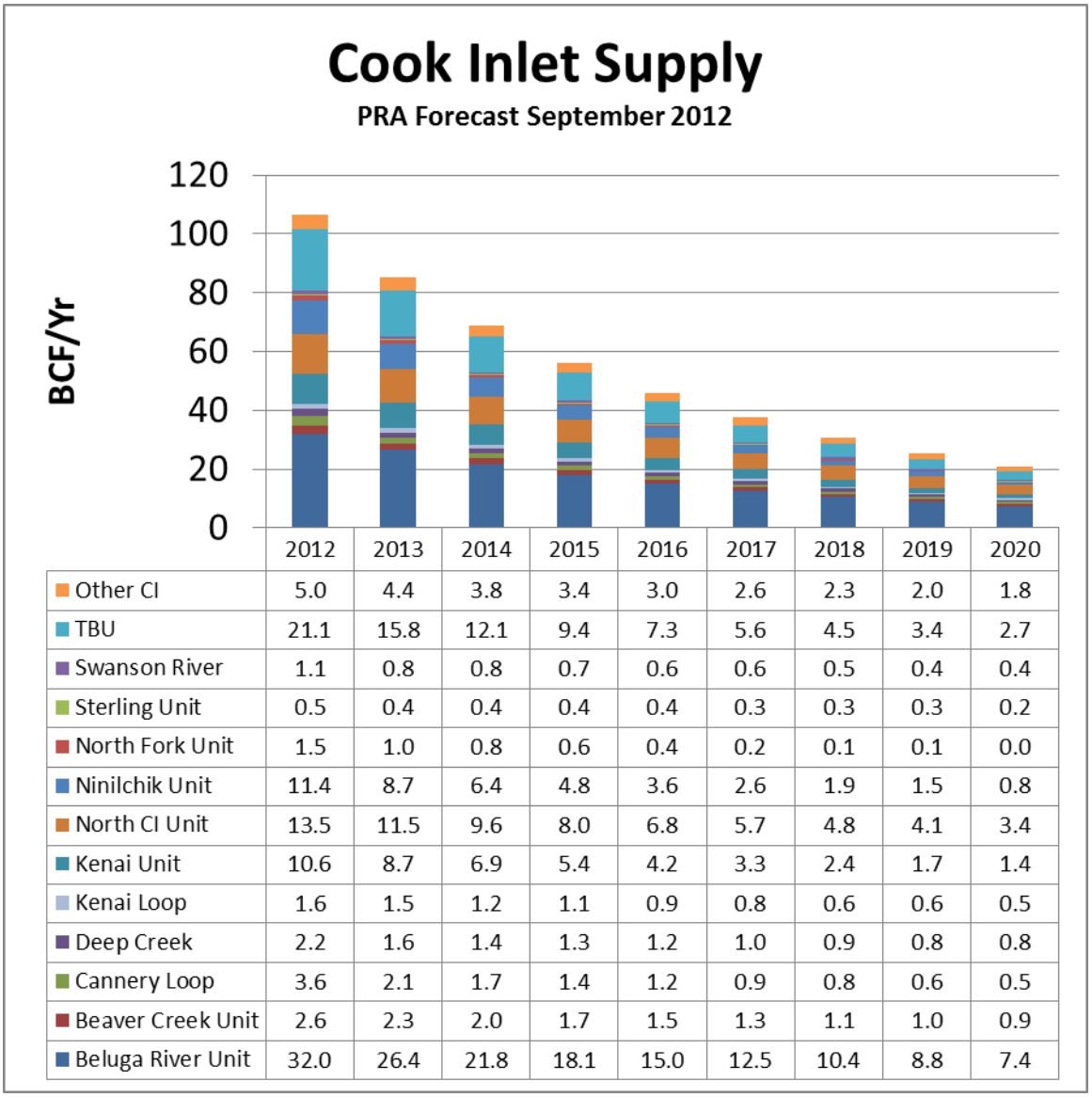
	2012 Predicted Average Rate, MMSCF/D	Predicted Annual Decline	Remaining BCF as of 1/1/12
Beaver Creek Unit	7.1	14%	18.6
Cannery Loop Unit	9.8	18%	12.9
Deep Creek Unit	6.1	10%	15.8
Sterling Unit	1.3	10%	3.8
Swanson River Unit	3.0	10%	7.3
Other Cook Inlet Fields	13.6	12%	37.8
Cook Inlet Total	**291.3**		**568.6**

Production curves and forecasts for each of the units above are shown in Appendix A.

The individual well decline curves for Beluga River, Kenai, Ninilchik, North Cook Inlet, North Fork and Trading Bay units are shown in Appendix B.

For the predictions in this study, an individual well was deemed to have reached an economic limit at 250 MSCF/D.

Figure 4 shows the estimate of annual supply from the existing wells in the current units. It is an estimate of the decline curve analysis for wells completed up to June 2012.



	2012	2013	2014	2015	2016	2017	2018	2019	2020
Other CI	5.0	4.4	3.8	3.4	3.0	2.6	2.3	2.0	1.8
TBU	21.1	15.8	12.1	9.4	7.3	5.6	4.5	3.4	2.7
Swanson River	1.1	0.8	0.8	0.7	0.6	0.6	0.5	0.4	0.4
Sterling Unit	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.2
North Fork Unit	1.5	1.0	0.8	0.6	0.4	0.2	0.1	0.1	0.0
Ninilchik Unit	11.4	8.7	6.4	4.8	3.6	2.6	1.9	1.5	0.8
North CI Unit	13.5	11.5	9.6	8.0	6.8	5.7	4.8	4.1	3.4
Kenai Unit	10.6	8.7	6.9	5.4	4.2	3.3	2.4	1.7	1.4
Kenai Loop	1.6	1.5	1.2	1.1	0.9	0.8	0.6	0.6	0.5
Deep Creek	2.2	1.6	1.4	1.3	1.2	1.0	0.9	0.8	0.8
Cannery Loop	3.6	2.1	1.7	1.4	1.2	0.9	0.8	0.6	0.5
Beaver Creek Unit	2.6	2.3	2.0	1.7	1.5	1.3	1.1	1.0	0.9
Beluga River Unit	32.0	26.4	21.8	18.1	15.0	12.5	10.4	8.8	7.4

Figure 4: 2012 Cook Inlet Gas Forecast 2012-2020

Figure 5 below shows the differences in Cook Inlet production forecasts between the 2010 Study and the 2012 Update for the existing Cook Inlet Fields.

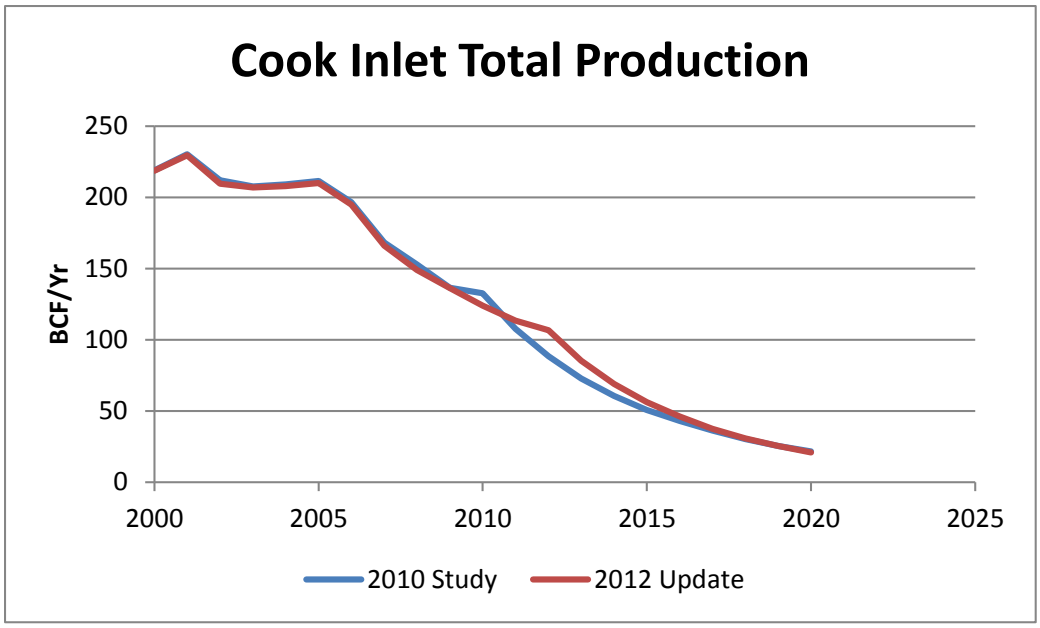


Figure 5: Cook Inlet Production & Forecast: 2010 Study v. 2012 Update

The increase in production in the 2012 Update is due primarily to the 11 wells completed since October, 2009 as shown in Table 2 and compression additions in Ninilchik and Beluga River Fields.

Period	# New Completions	Production Rate Added MMSCF/D
Nov-09 to Oct-10	5	18.5
Nov-10 to Oct-11	7	12.3
Nov-11 to Jun-12	4	21.4

Table 2: Cook Inlet Gas Completions from November 2009 through June 2012

There were four wells completed as Cook Inlet gas wells between November 2011 and June 2012 that averaged 5.4 MMSCF/D for their first six months of production. Rates of these new wells are shown in Table 3.

Well Name	Producer	Well Class	Initial Rate, 6 Month Avg. MMSCF	Status
Kenai Loop 1	Buccaneer	Exp - Gas	4.2	Producing
TBU M-21	Hilcorp	Dev - Gas	10.0	Producing
NU S Dionne 7	Marathon	Dev - Gas	0	Shut In
BRU 224-23T	ConocoPhillips	Dev - Gas	7.2	Producing

Table 3: Wells Completed December 2011 through June 2012

Material increases in the 2012 Cook Inlet Update in individual fields are as follows:

- Beluga River
  - Compression was added in the Field
  - 2 Re-drills were completed: BRU 212-24T and BRU 224-23T
- Ninilchik Unit
  - Compression was added at well pads
  - 2 New wells were drilled: Paxton #4 and S. Dionne #7
- Trading Bay Unit
  - 4 New wells were drilled: M-10, M-20, M-11 & M-21

Figures 6, 7 and 8 show the differences in forecasts from the 2010 Study and the 2012 Update for Beluga River, Ninilchik and TBU Units, respectively.

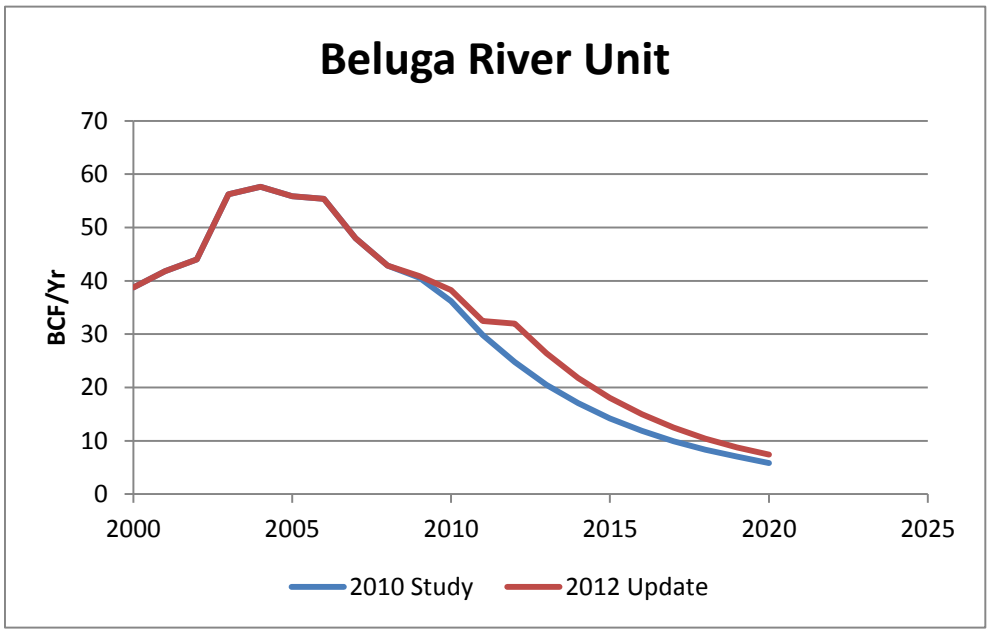


Figure 6: Beluga River Unit Production & Forecast: 2010 Study v. 2012 Update

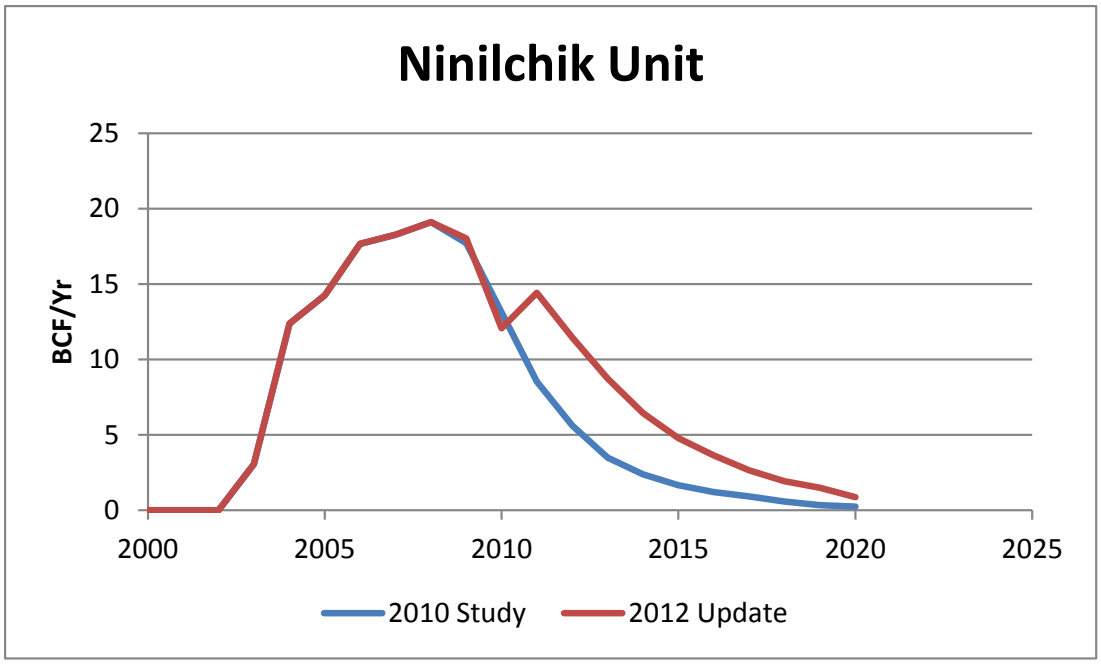


Figure 7: Ninilchik Unit Production & Forecast: 2010 Study v. 2012 Update

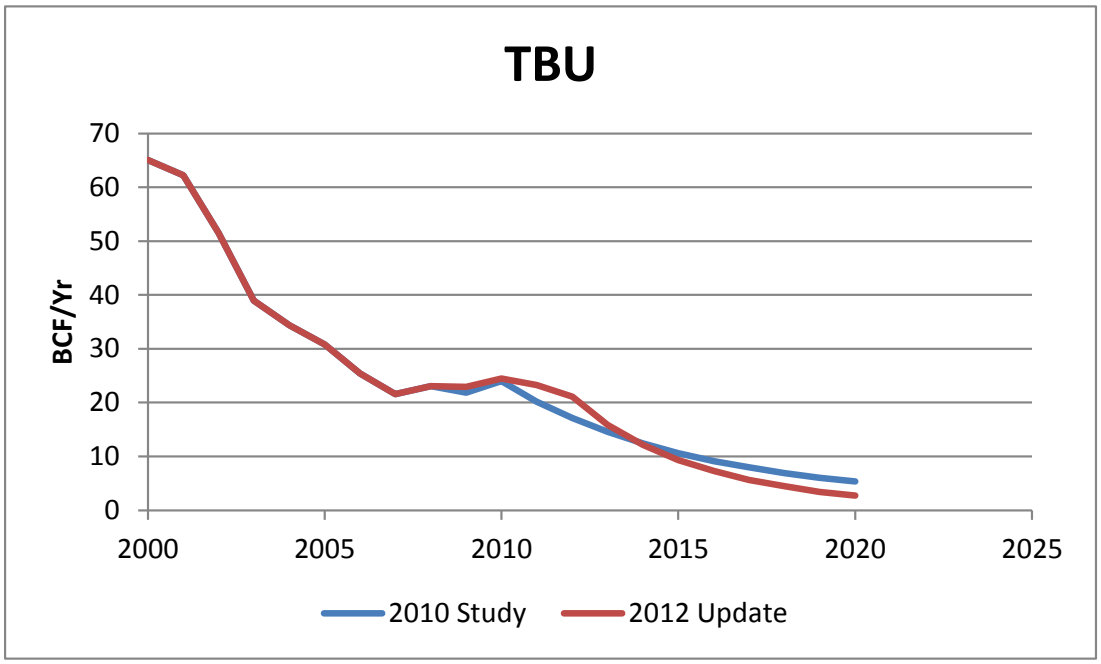


Figure 8: Trading Bay Unit Production & Forecast: 2010 Study v. 2012 Update

III. Timing of Supply Shortfall with Current Cook Inlet Fields

Figure 9 shows a comparison of projected demand and supply forecast from the wells in existing fields with no further development.

A shortfall develops in 2014 under this scenario of no further Cook Inlet gas well development.

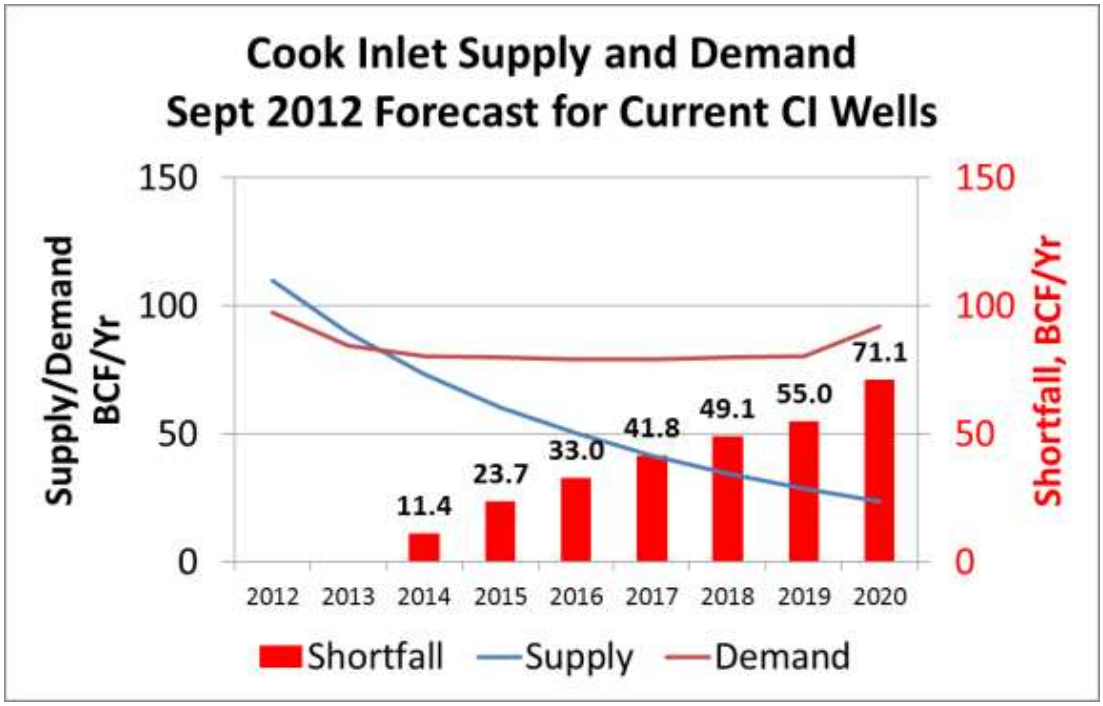


Figure 9: 2012 CI Supply/Demand and Shortfall from Current CI Wells.

In the 2010 Study, a no-development scenario supply forecast predicted a shortfall as early as 2013. Due to the additional wells drilled and compression additions since then, the shortfall forecast in the 2012 Update, assuming no further development, is predicted in 2014.

IV. Potential New Developments

In 2012, exploration is occurring both onshore and offshore in Cook Inlet. Exploration programs include the Spartan 151 jack-up rig and the expected Adriatic XI jack-up rig, the Apache seismic program and onshore prospects planned by Buccaneer and Nordaq.

New developments that have been identified as of this update include the development of Kenai Loop and delineation and development of Shadura. Other developments could be infield development of current Cook Inlet fields. Timing of these new developments is estimated from phone conversations, when possible, or recent filed Unit Plan of Developments.

Onshore Developments

Armstrong has permitted 2 gas development wells at North Fork: 23-25 and 22-35.

Buccaneer is currently drilling Kenai Loop #4 as a gas well.

ConocoPhillips has drilled 2 wells at Beluga River Unit, 242-04 and 244-23. They have just recently been completed.

Hilcorp has permitted Happy Valley Unit B-14 as a gas well and is currently installing pipeline to Red Pad. Hilcorp has stated that they will spend $203 million in capital in 2012 to develop oil and gas. They expect to spend approximately $150 million per year over next 2 years.

Nordaq indicated that they were being delayed by permits in having been required to obtain an EIS rather than an EA. The earliest Shadura #1 is estimated to complete testing and the discovery delineated will be the summer of 2013; earliest production is estimated to be Q3-Q4 2013.

Marathon has said that the S. Dionne #7 was one of two potential wells planned at Ninilchik Unit in the current POD. S. Dionne #7 has been put on production, but at very low rates and it is not currently producing.

In the current Beluga River POD, it is stated that drilling a well to replace 214-26 will be evaluated. ML&P expects that there could be additional wells drilled in the near future. BRU 224-23T was drilled and is currently producing 7 MMSCF/D. There are 2 additional wells that were drilled in 2012.

Onshore Exploration

Buccaneer plans an exploration well in the West Eagle prospect, near the North Fork Unit.

Cook Inlet Energy has permitted the Otter #1 gas exploration well near Beluga River Unit.

Nordaq plans an exploration well in the Tiger Eye prospect on Cook Inlet's west side, near the Trading Bay Production Facility. Nordaq has stated that they will drill by the end of 2012.

Apache is acquiring extensive onshore and offshore seismic data and has announced that they will drill an onshore exploration well near Tyonek by year-end 2012.

Offshore Exploration and Developments

Hilcorp had planned an additional well from the Steelhead platform in the current plan of development. Hilcorp recently acquired Chevron's Cook Inlet assets but would not comment on development plans other than the POD. The recent rig activity reported by Petroleum News showed Hilcorp working over M-16 RD, a well that showed a dramatic drop in production in the latest forecast.

There are several offshore exploration wells planned by Buccaneer and Furie (operating former Escopeta prospects) with the two jack ups. Furie is currently drilling the Kitchen Lights #2 well. Buccaneer has announced that they will be drilling their Cosmopolitan prospect this winter.

Apache is shooting a large 3D seismic program offshore, but the program has been delayed by permits.

It is estimated that any offshore gas discoveries are likely to take at least take 3-5 years to develop after discovery due to permitting and construction timing.

V. Future Production Scenarios

To understand how future development of gas wells will affect timing of potential shortfalls, sensitivities were made assuming 10 MMSCF/D and 20 MMSCF/D per year being added from future Cook Inlet developments for the years 2013 through 2019.

The rates assumed in these sensitivities are based on results of the actual development shown in Table 2, Cook Inlet Gas Completions from November 2009 through June 2012, in which 18.5 MMSCF/D was added in the first year, 9.9 MMSCF/D was added in the second year, and 21.4 MMSCF/D was added from November 2011 through June 2012.

Figures 10 and 11 show existing production and future scenarios of 10 MMSCF/D of production added annually and 20 MMSCF/D of production added annually. The decline for new production is assumed to be 15% per year.

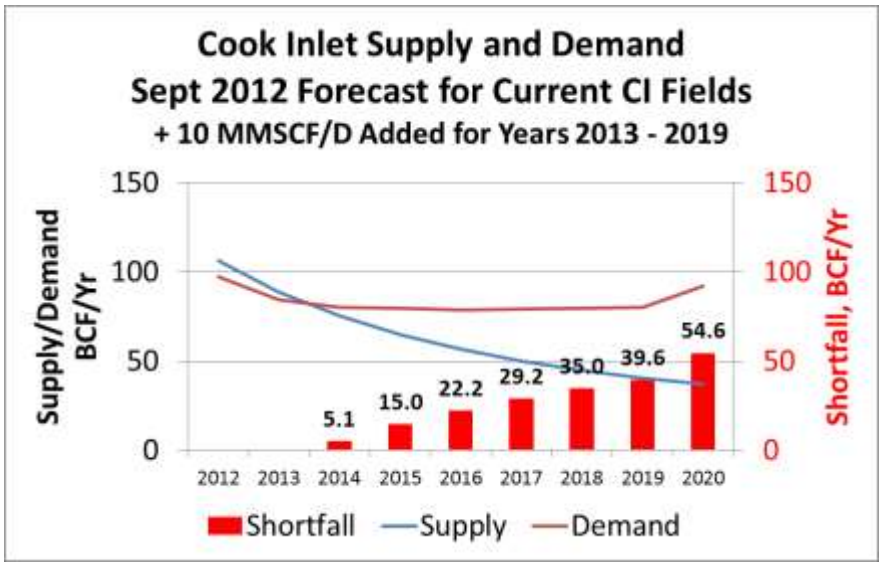


Figure 10: Supply/Demand & Shortfall with 10 MMSCF/D of New Production Added Annually.

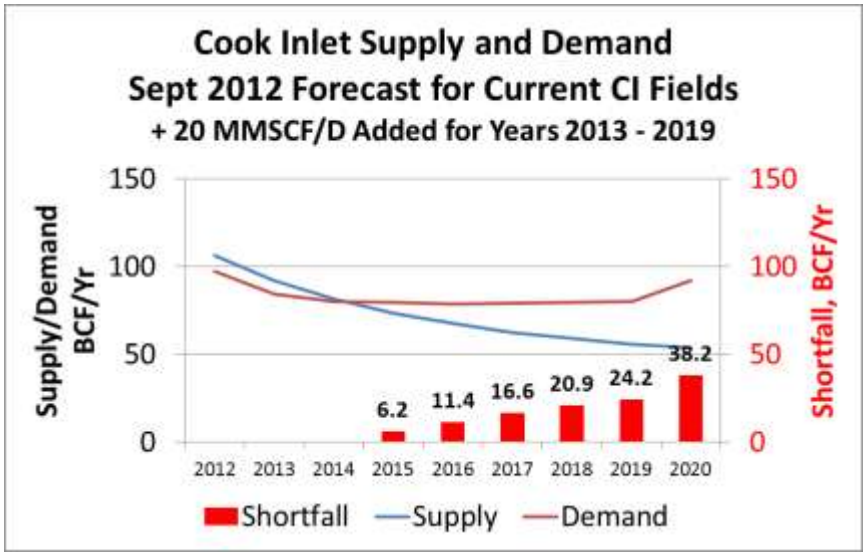


Figure 11: Supply/Demand & Shortfall with 20 MMSCF/D of New Production Added Annually.

The estimated shortfall is an average of 31 MMSCF/D each year from 2013 to 2019. Using the same approach as the 2010 Study of adding wells to meet demand through 2020, an estimated 157 new gas completions would be required from 2013-2019 as shown in Figure 12.

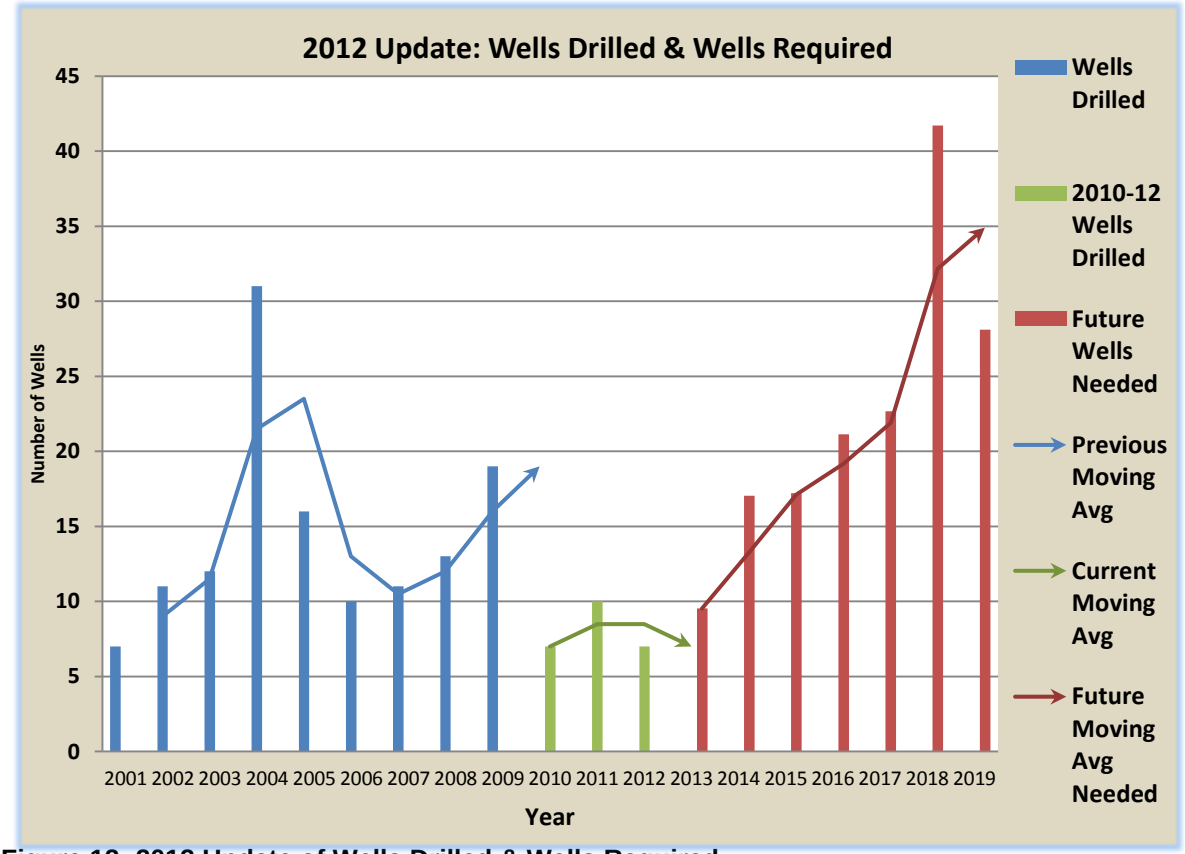


Figure 12: 2012 Update of Wells Drilled & Wells Required

VI. Conclusion

Table 3 shows a summary of the scenarios investigated in the 2012 Update. If there is no drilling activity to add new production in Cook Inlet, a shortfall occurs as early at 2014.

Scenario	Initial Year of Shortfall	Initial Year Shortfall Amount, BCF
Existing Cook Inlet Fields	2014	11.4
Existing Fields + Annual Addition of 10 MMSCF/D Production from New Wells 2013-2019	2014	5.1
Existing Fields + Annual Addition of 20 MMSCF/D Production from New Wells 2013-2019	2015	6.2

Table 4: 2012 Cook Inlet Gas Supply Scenarios

Even if there is a robust level of activity that annually adds 20 MMSCF/D of new gas to the Cook Inlet supply, a shortfall is still predicted to occur in as early as 2015.

If 31 MMSCF/D of new production is added each year from new completions 2013-2019, a shortfall will be avoided.

It is estimated that 157 new gas completions are required to meet demand between 2013-2020.

The most likely sources of new production in Cook Inlet would be from existing fields such as Beluga River Unit and Trading Bay Unit, development of recent discoveries such as Kenai Loop and Shadura, or possible successes at Otter, Tiger Eye or the Apache Tyonek well.

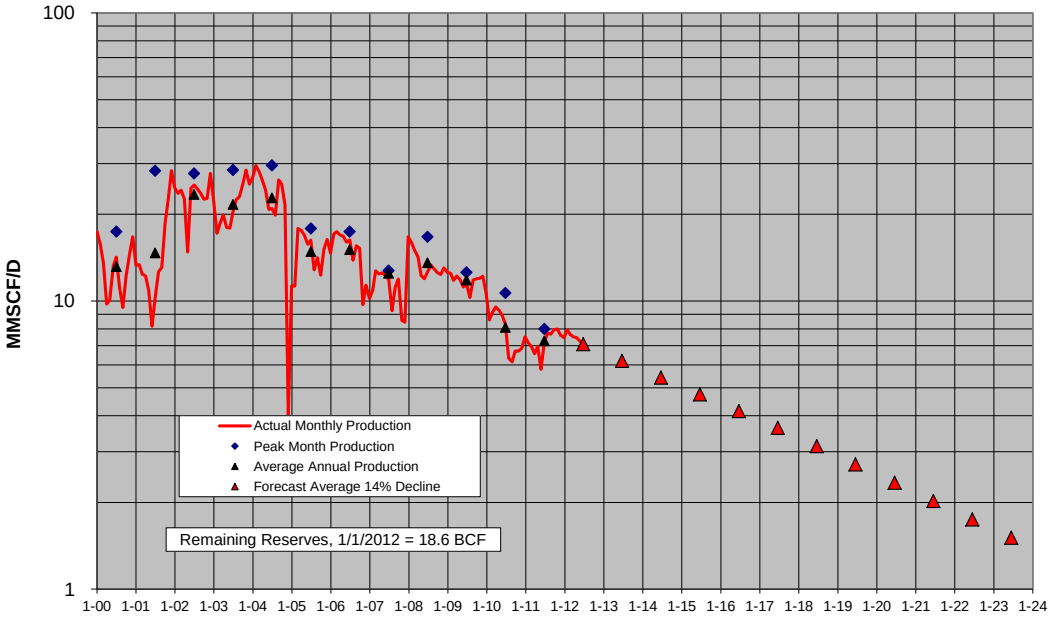
If there are no large discoveries made that can be brought to production within 1-2 years, it is likely the current pace of drilling activity will result in a shortfall in Cook Inlet gas supply as early as 2014 or 2015.

Any major new gas discoveries from offshore exploration are not likely to be brought on production within 3-5 years due to permitting, planning and construction of offshore facilities and pipelines.

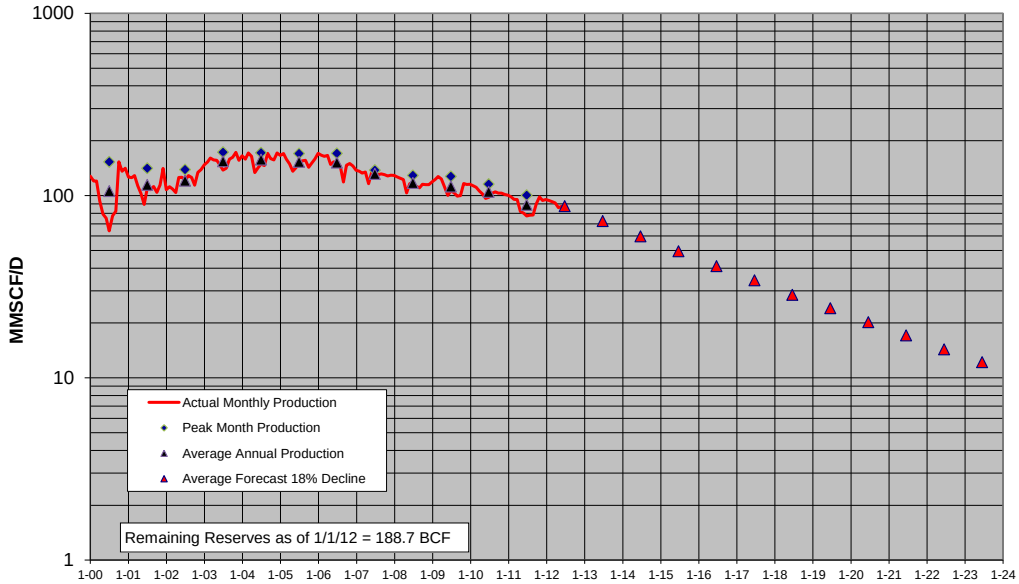
VII. Appendices

Appendix A: Cook Inlet Unit Production and Forecasts

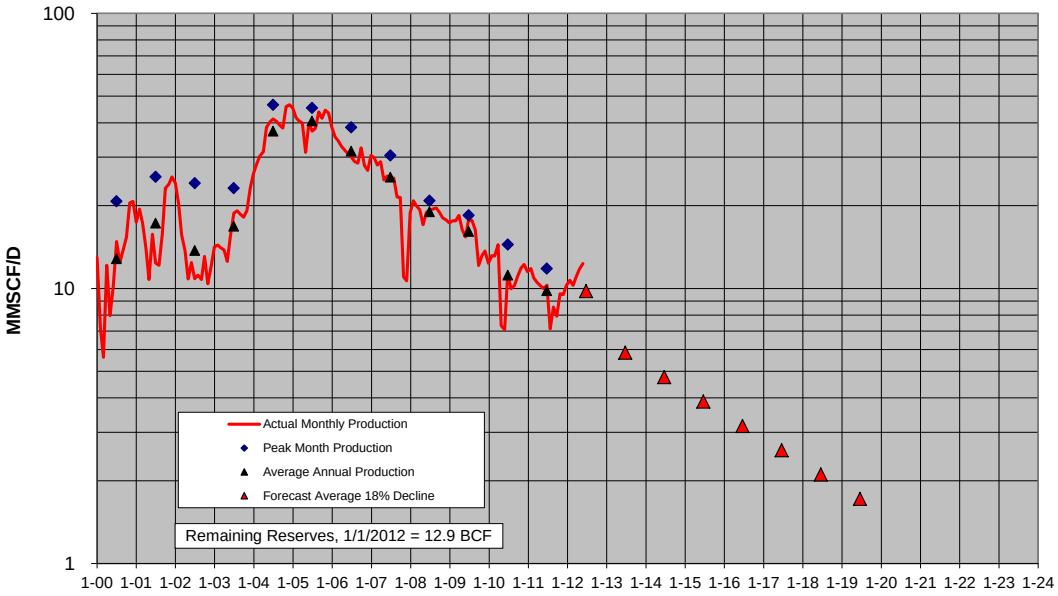
BEAVER CREEK UNIT Gas Production



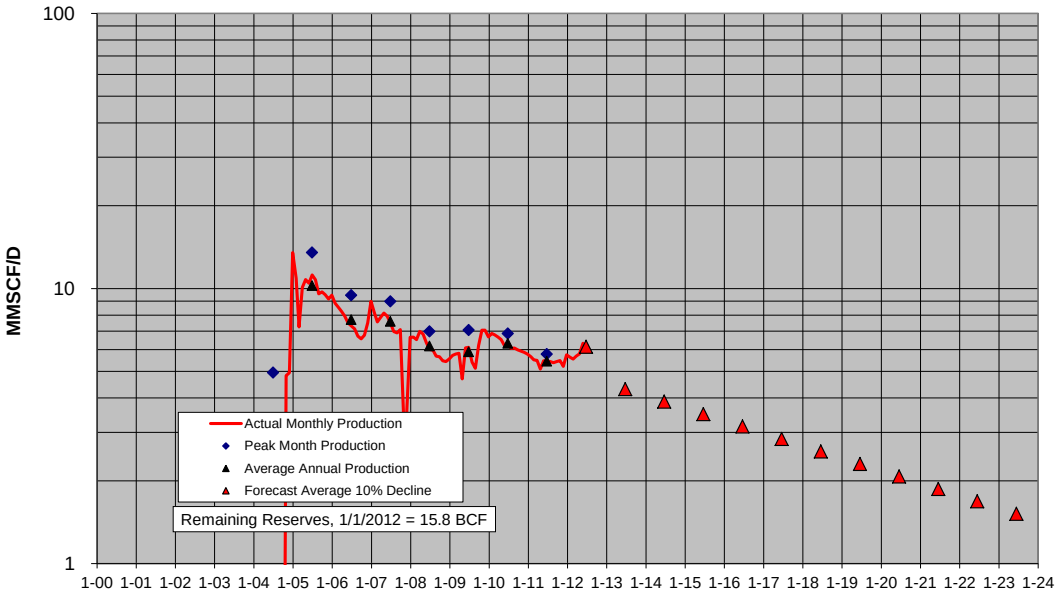
Beluga River Unit Total



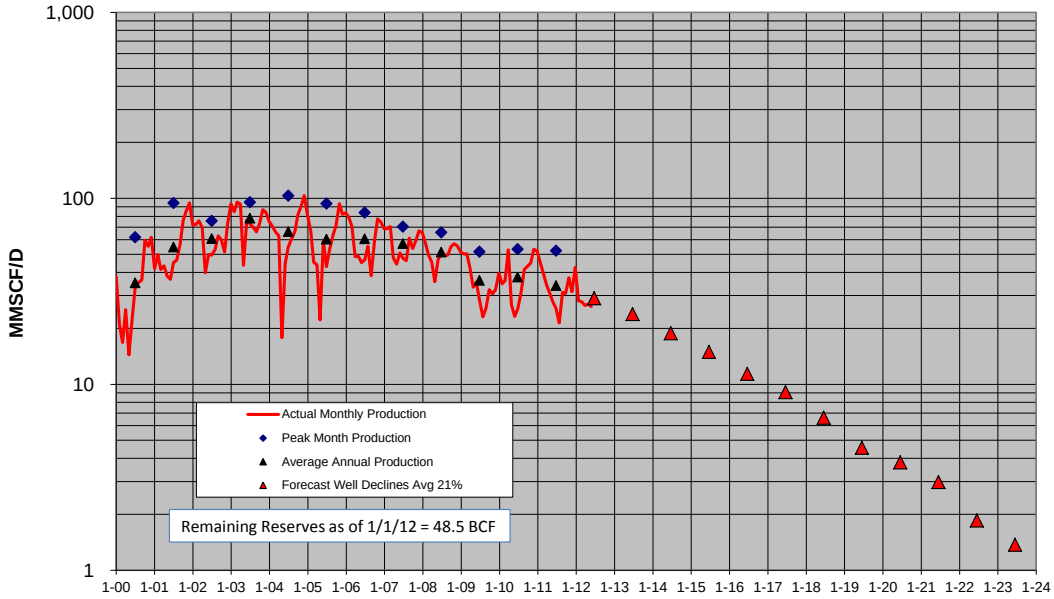
CANNERY LOOP UNIT Gas Production



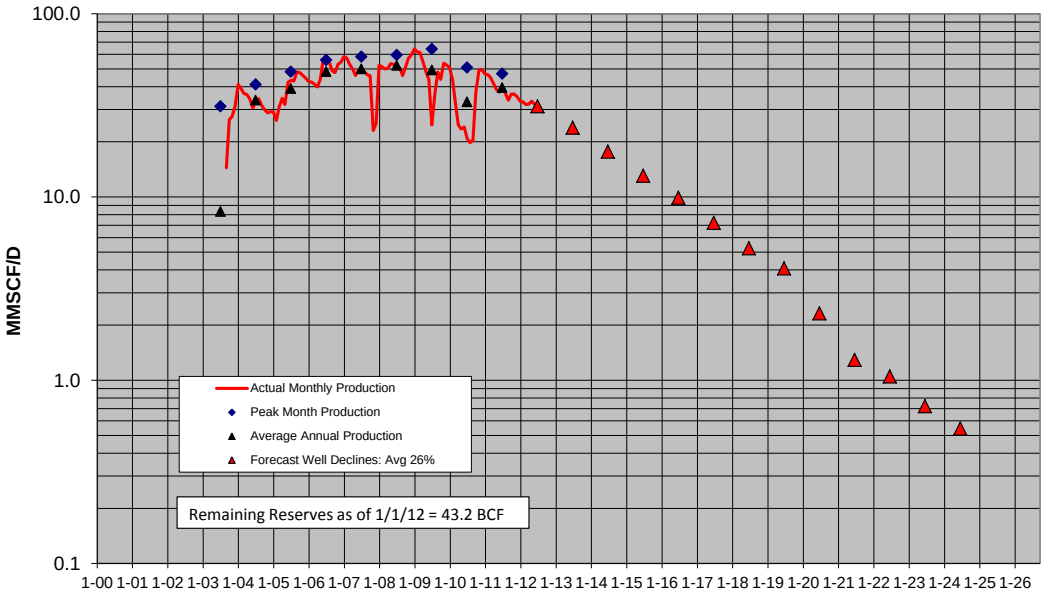
Deep Creek Unit Gas Production



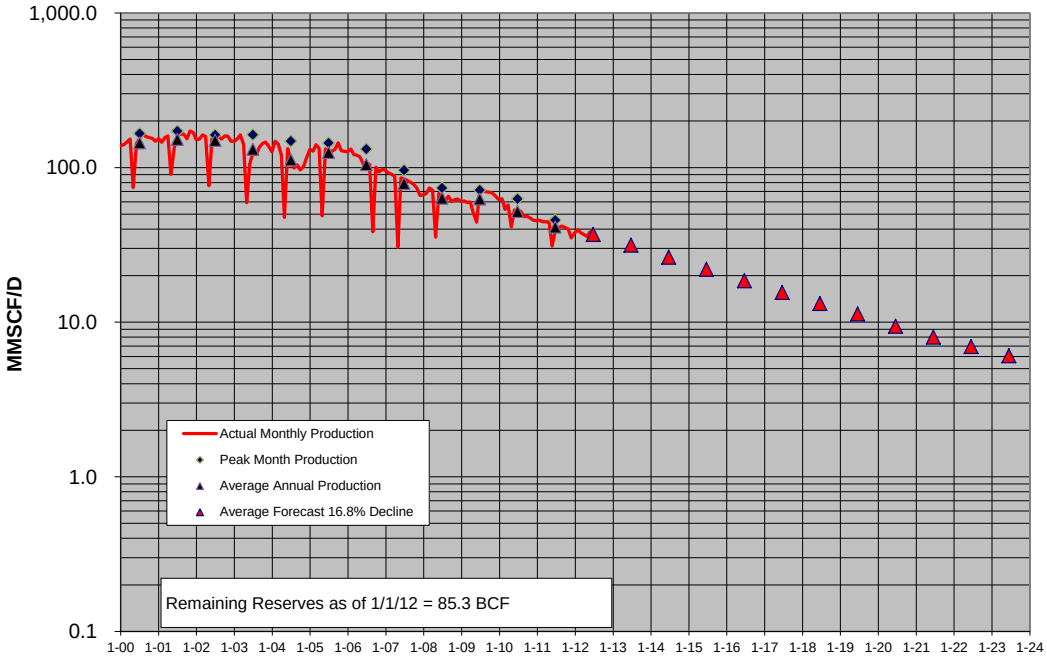
KENAI UNIT TOTAL



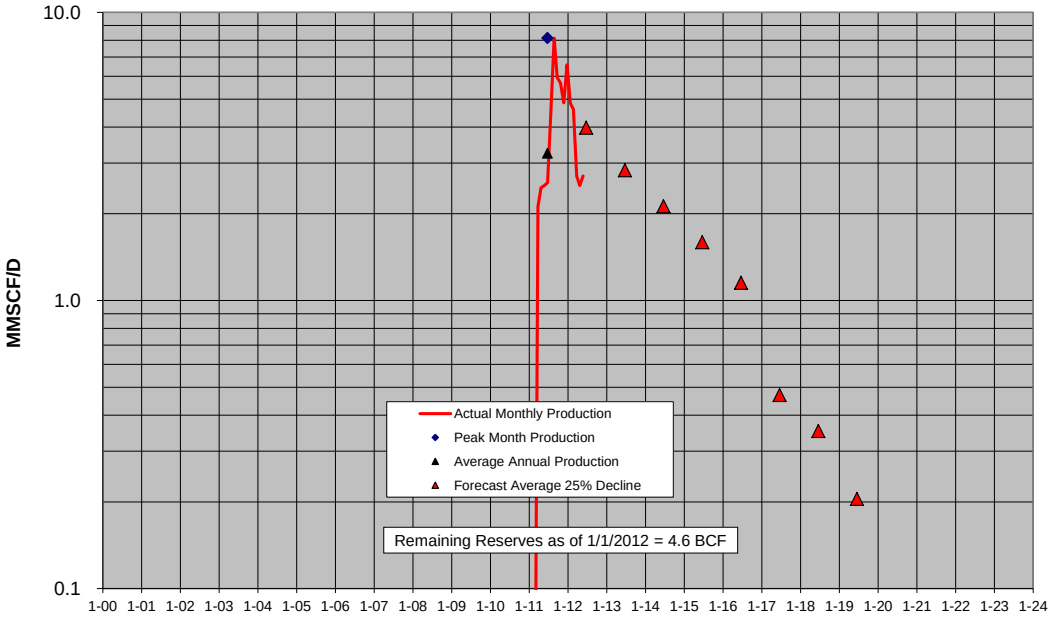
Ninilchik Unit Gas Production



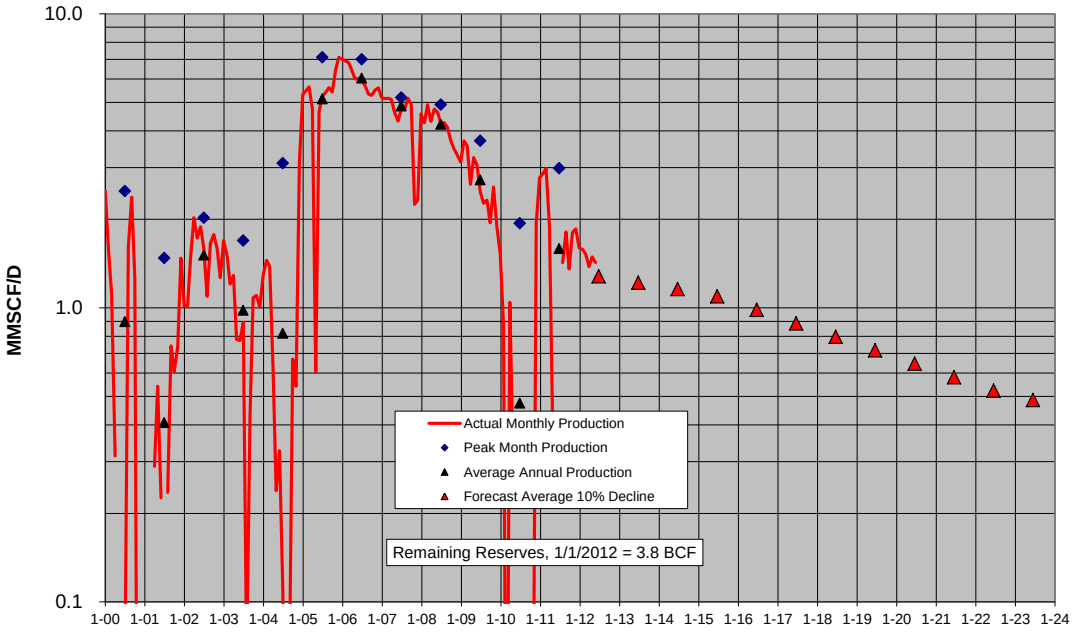
North Cook Inlet Total



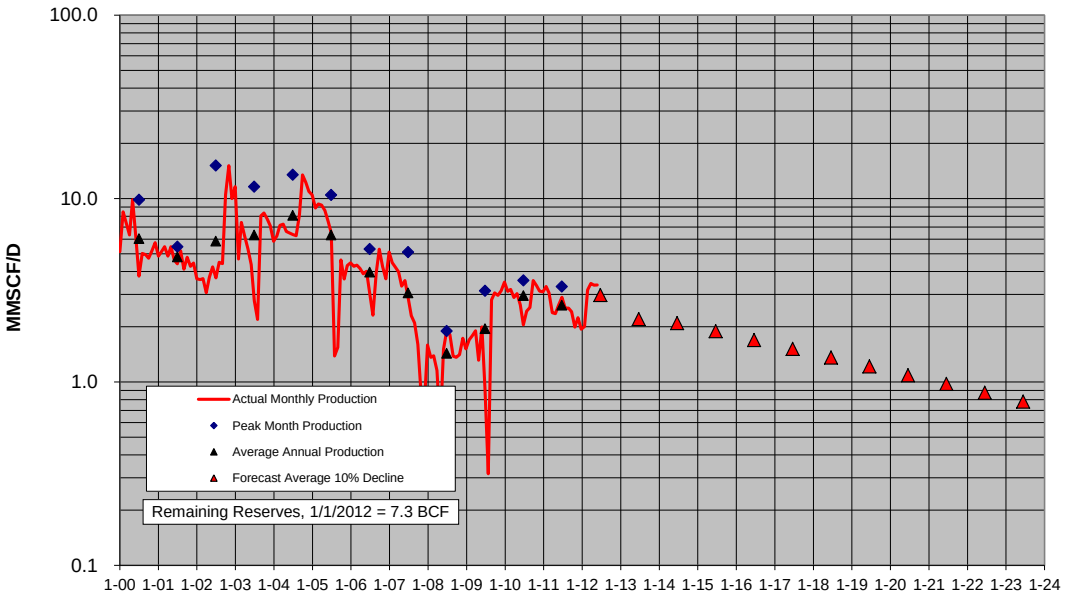
NORTH FORK UNIT Gas Production



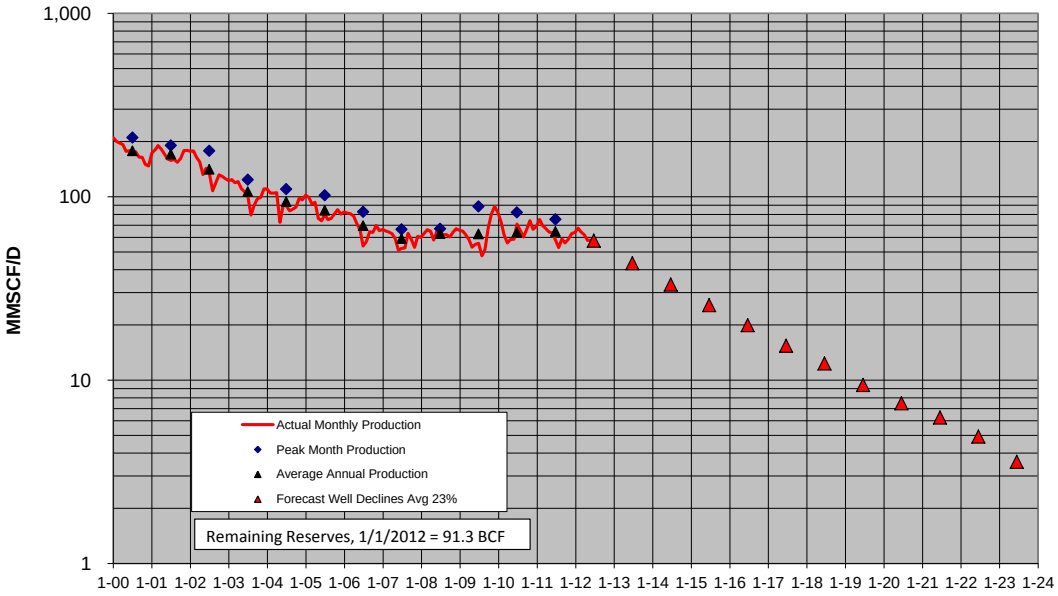
STERLING UNIT Gas Production



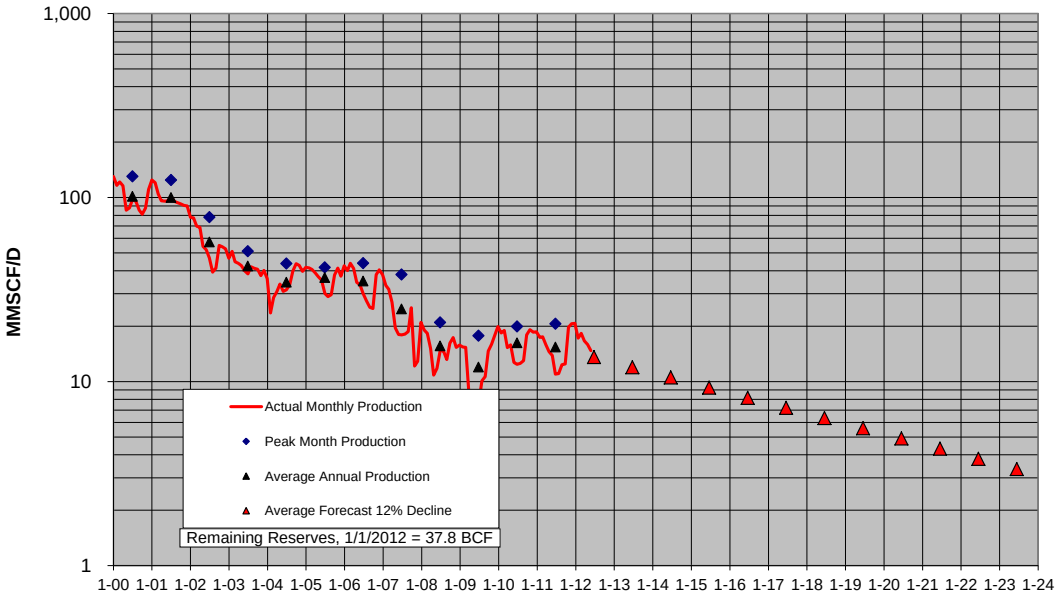
SWANSON RIVER Gas Production



TRADING BAY UNIT Gas Production

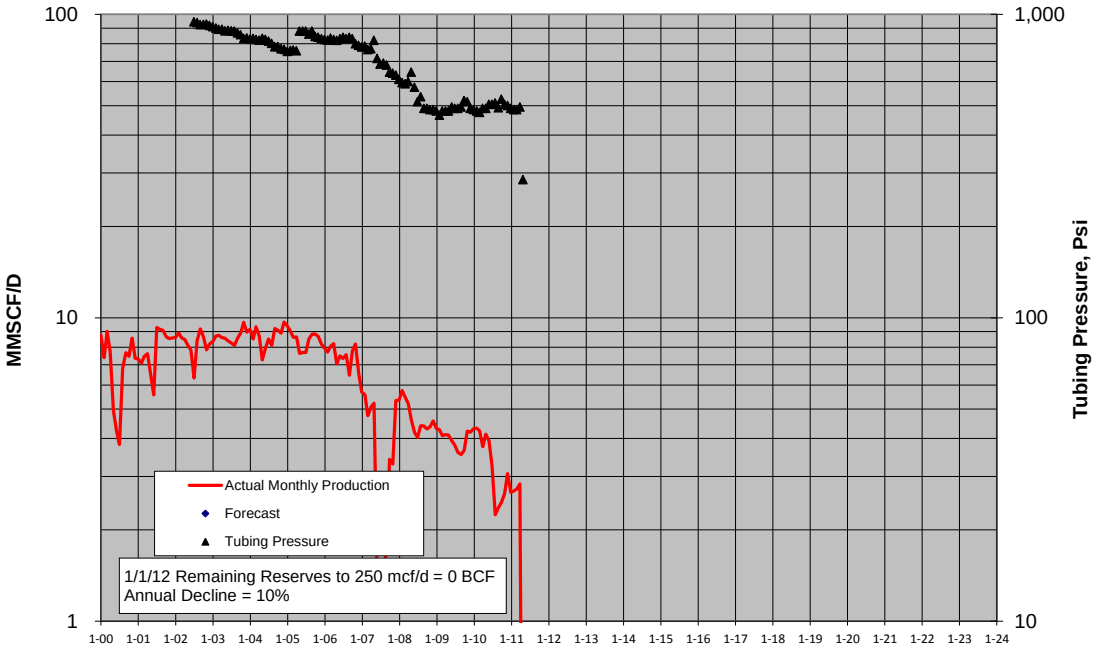


Cook Inlet Other Field Production w/o Storage

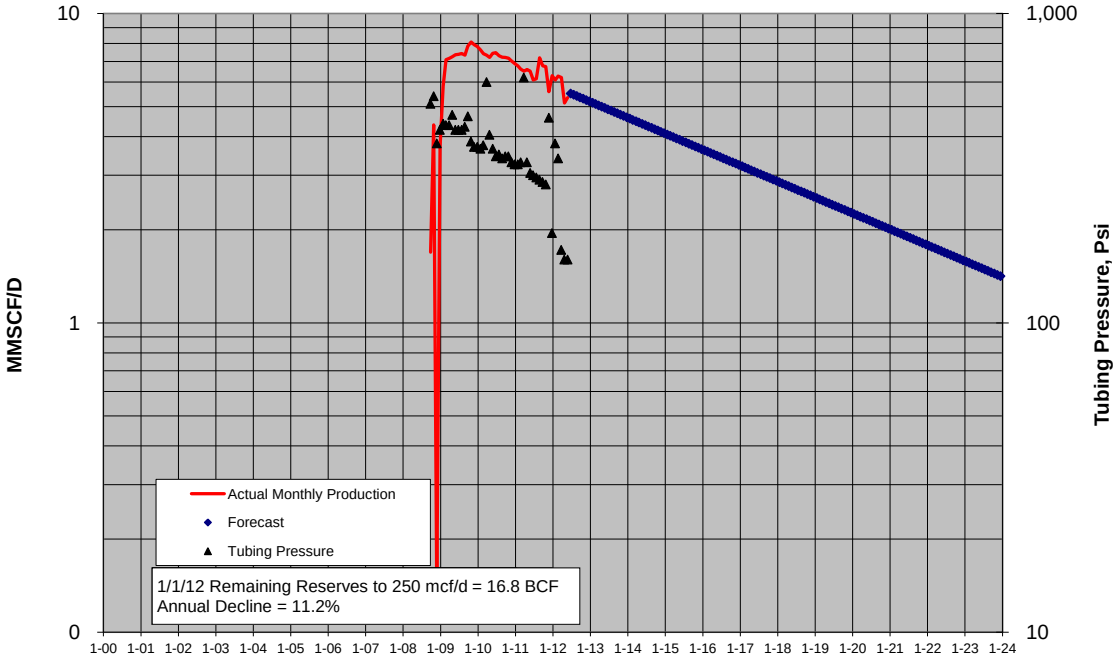


Appendix B-1: Beluga River Unit Well Decline Curves

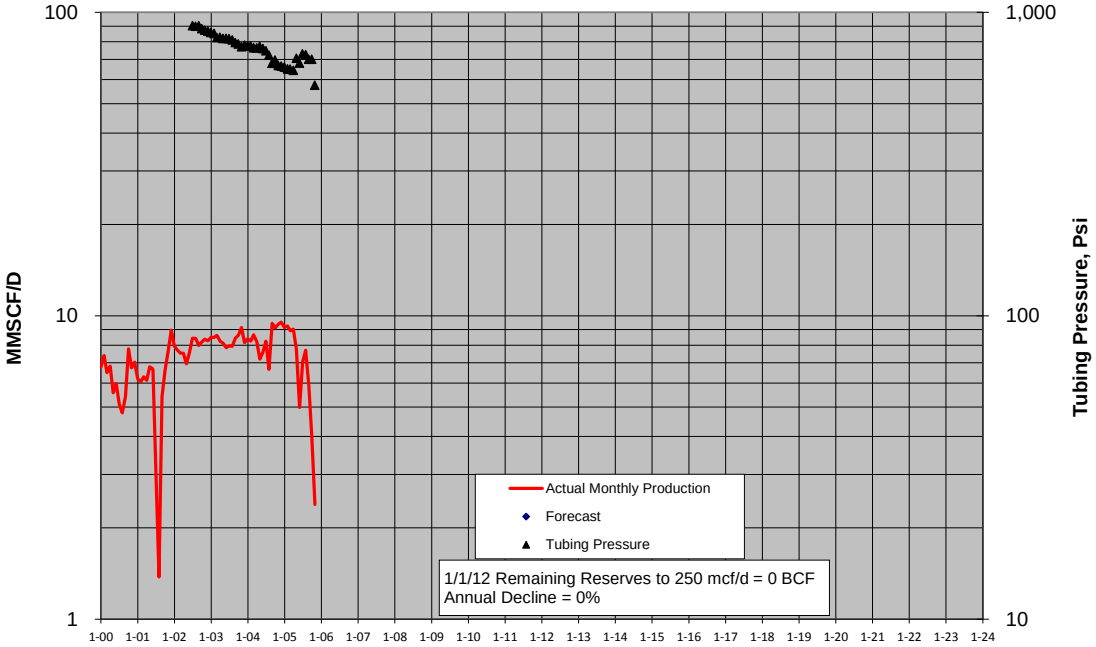
Beluga River Unit #211-03



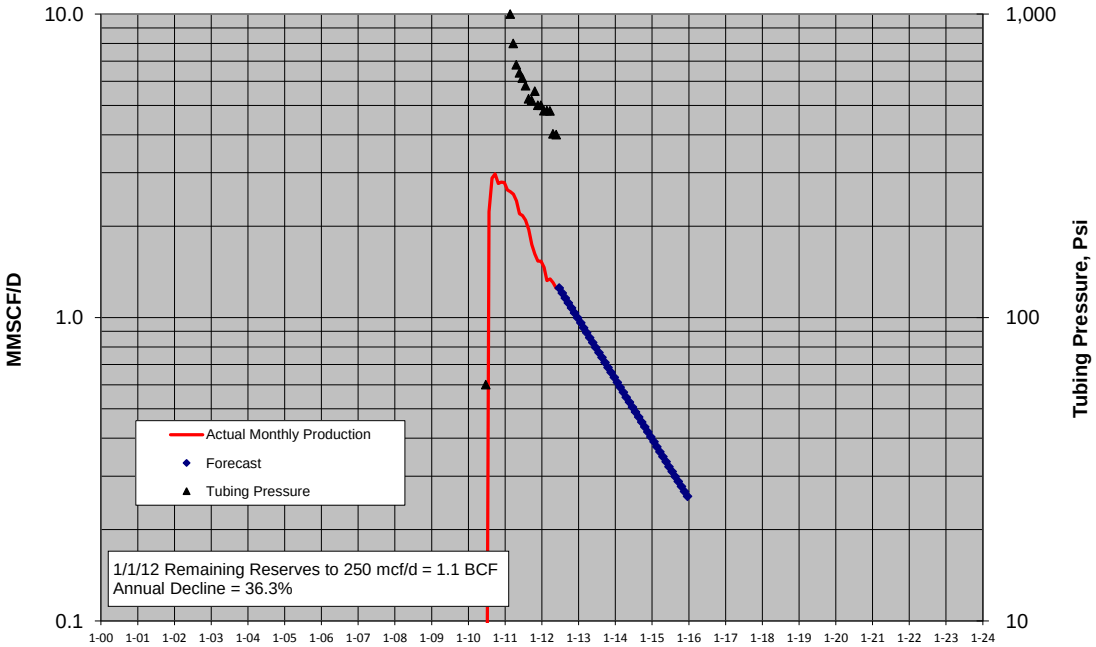
Beluga River Unit #211-26



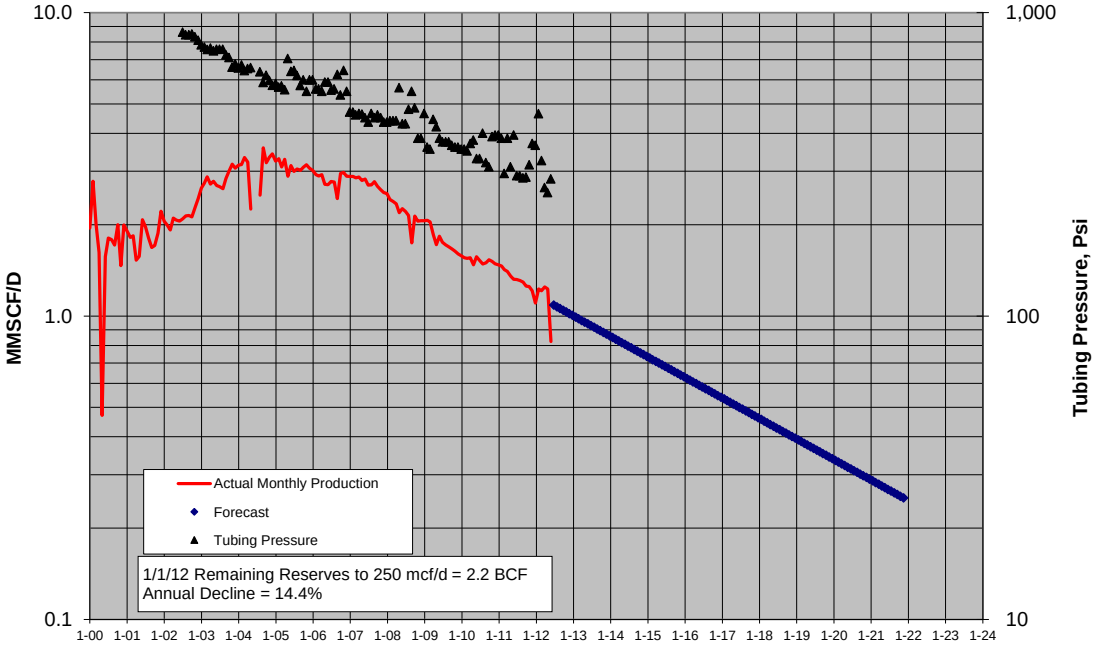
Beluga River Unit #212-24



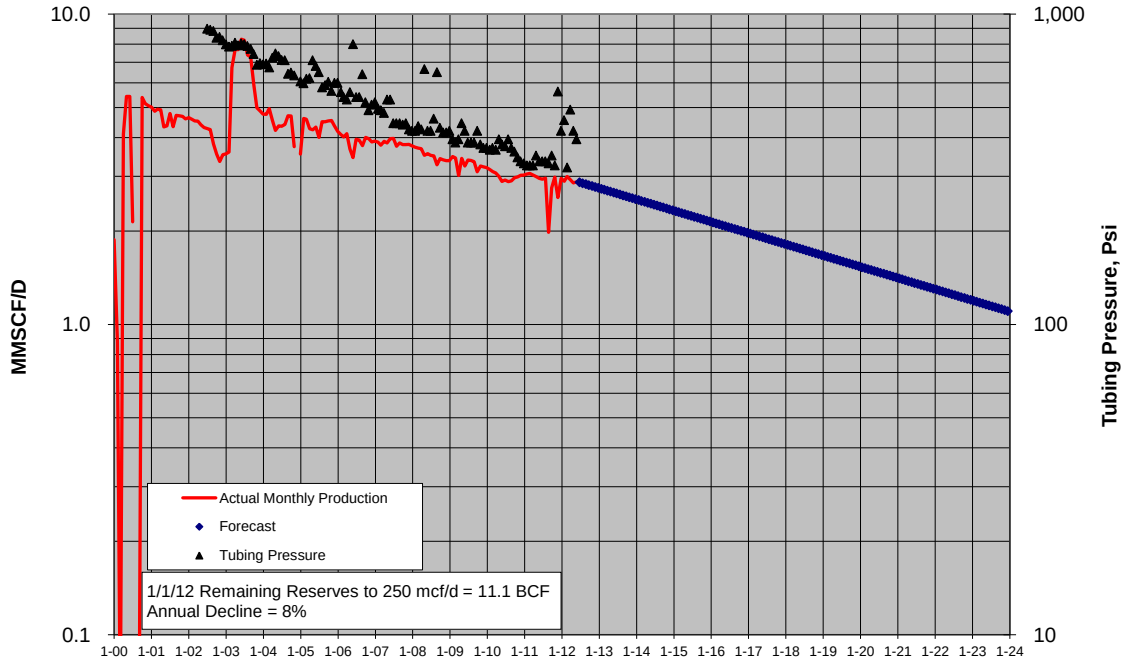
Beluga River Unit #212-24T



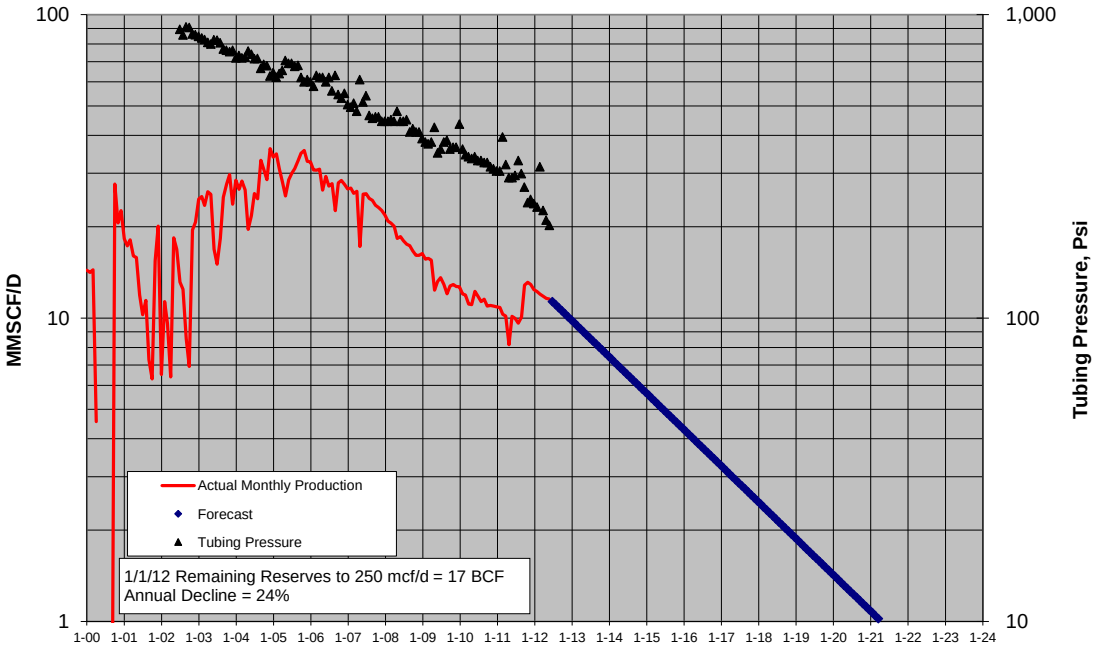
Beluga River Unit #212-25



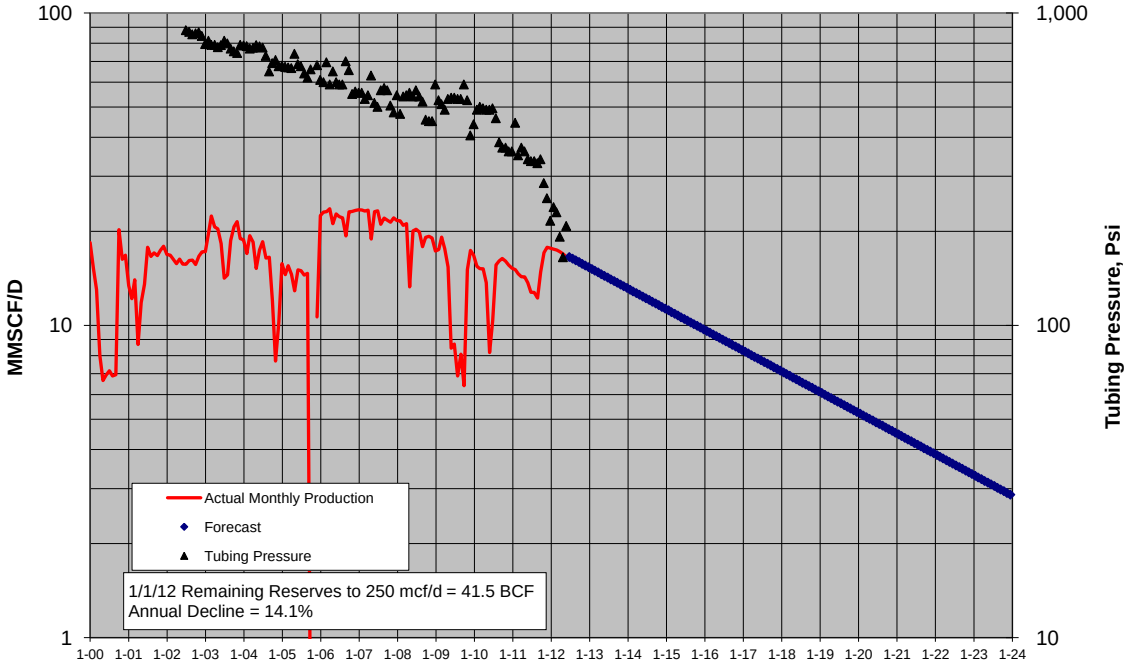
Beluga River Unit #212-35



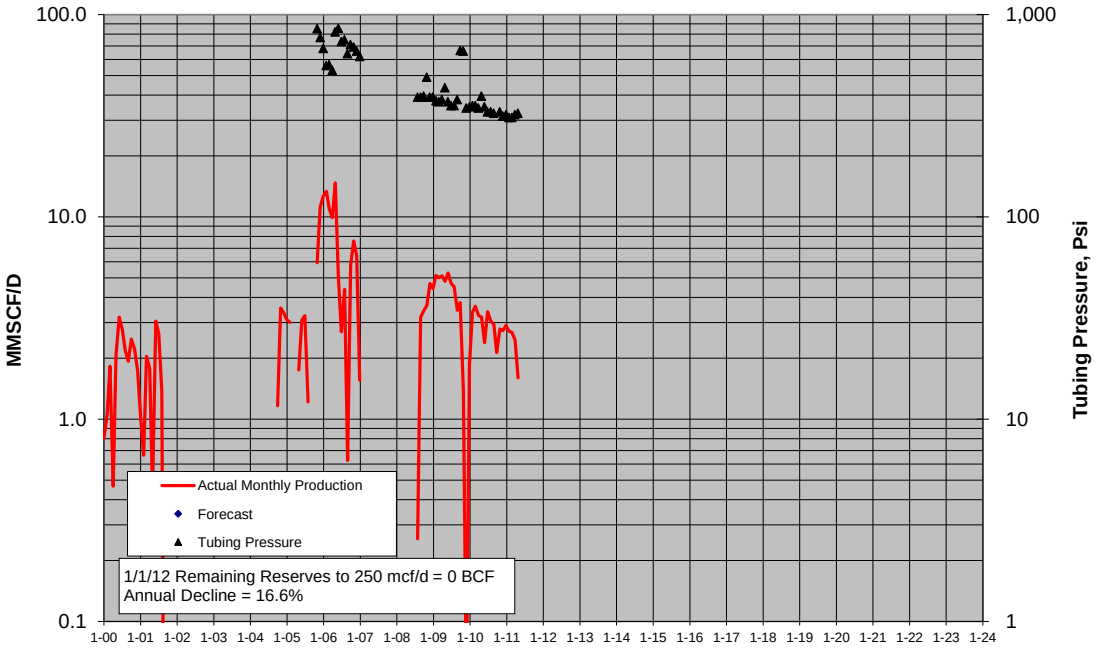
Beluga River Unit #212-35T



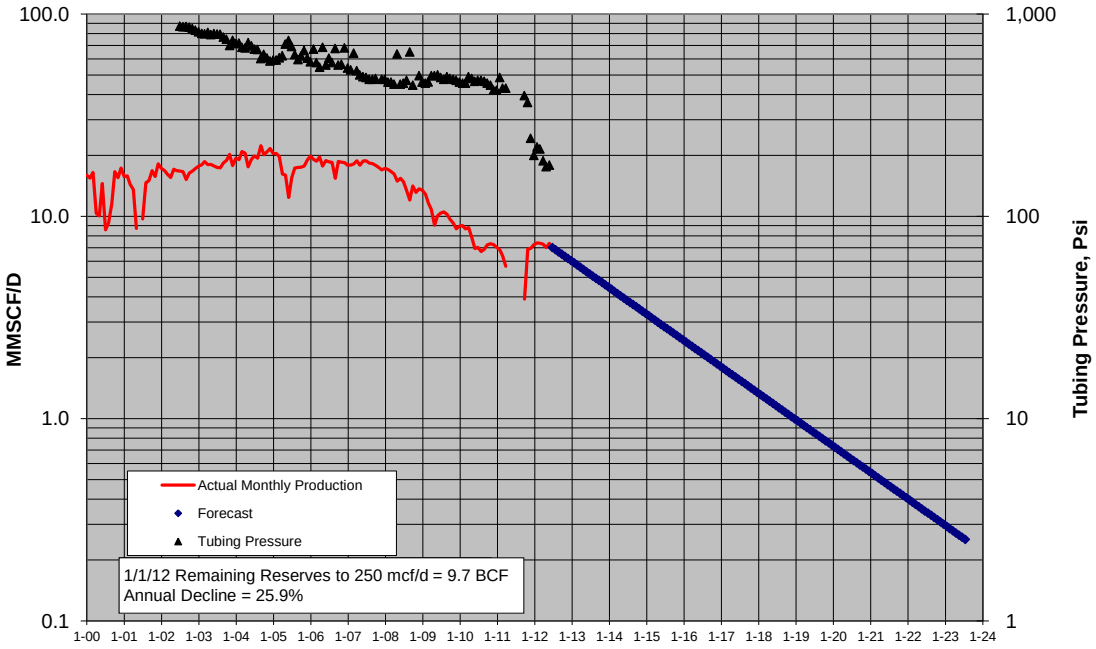
Beluga River Unit #214-26



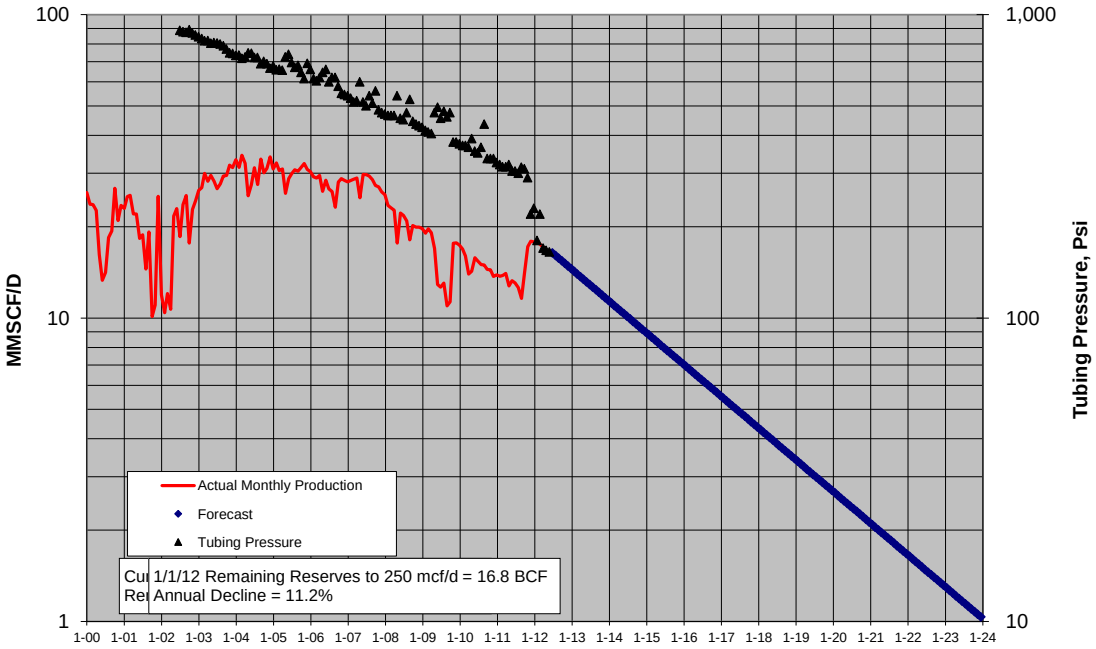
Beluga River Unit #224-13



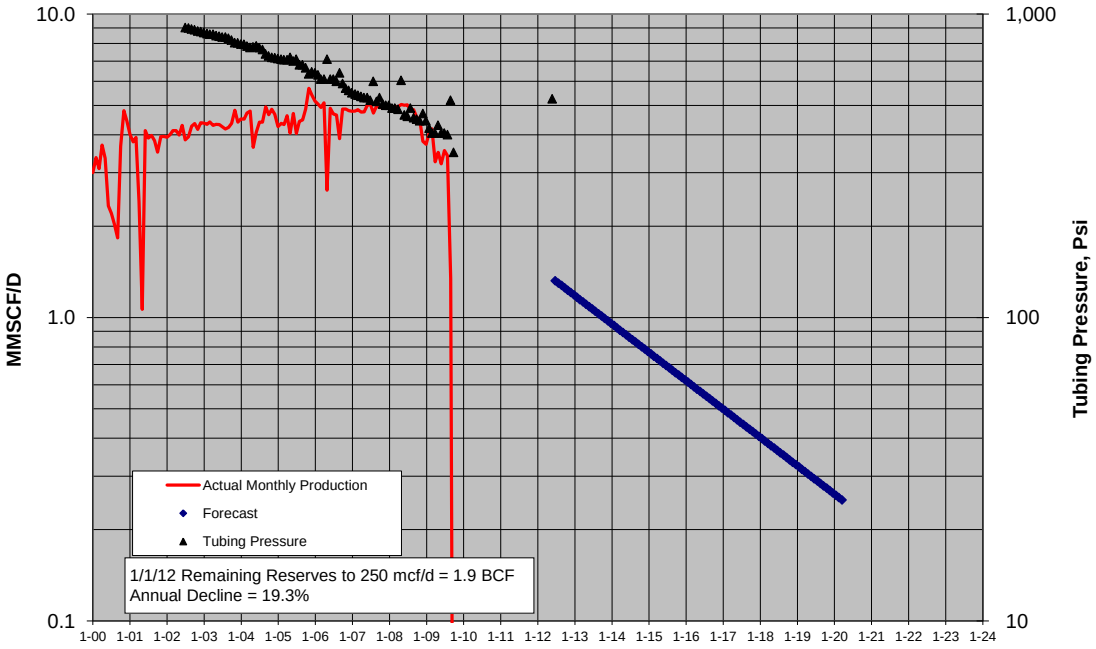
Beluga River Unit #224-23 & 224-23T



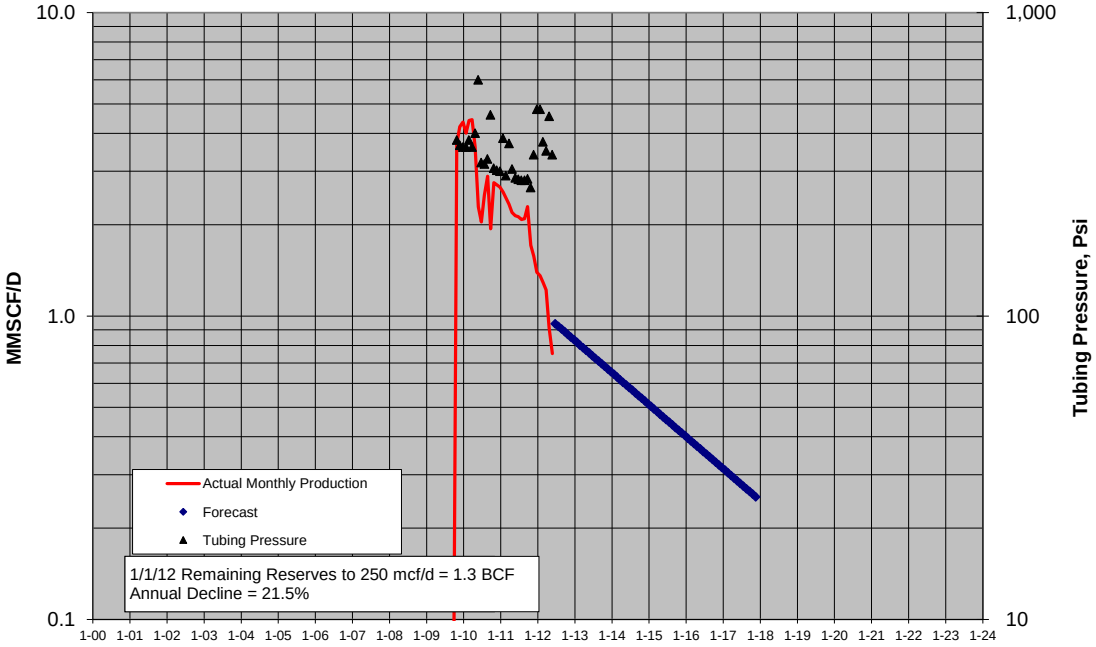
Beluga River Unit #224-34



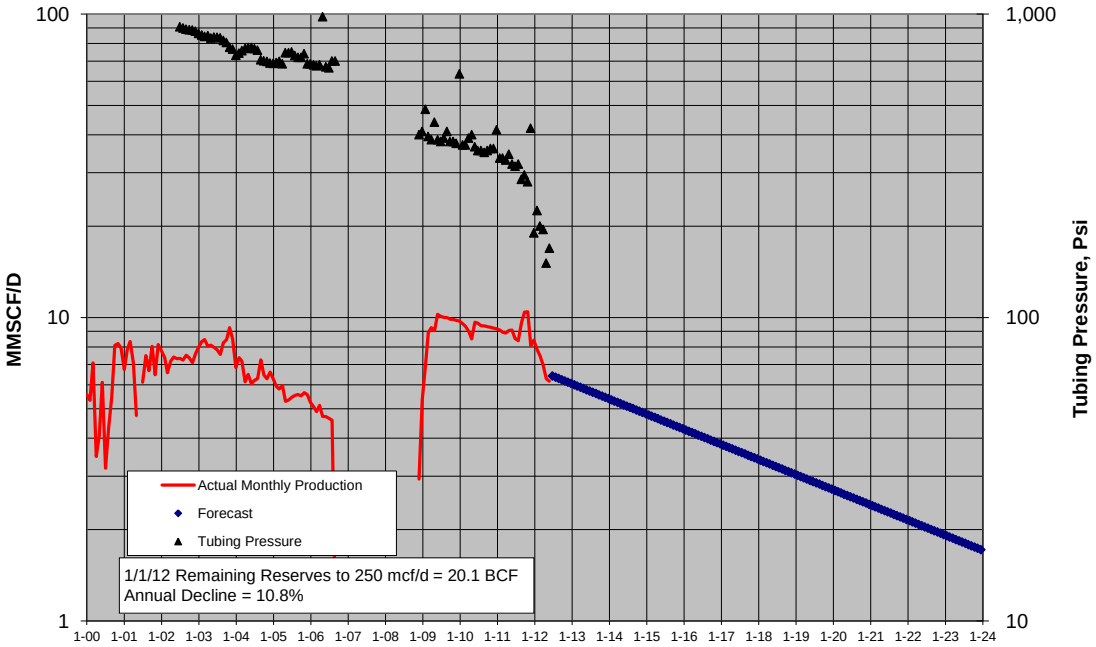
Beluga River Unit #232-04



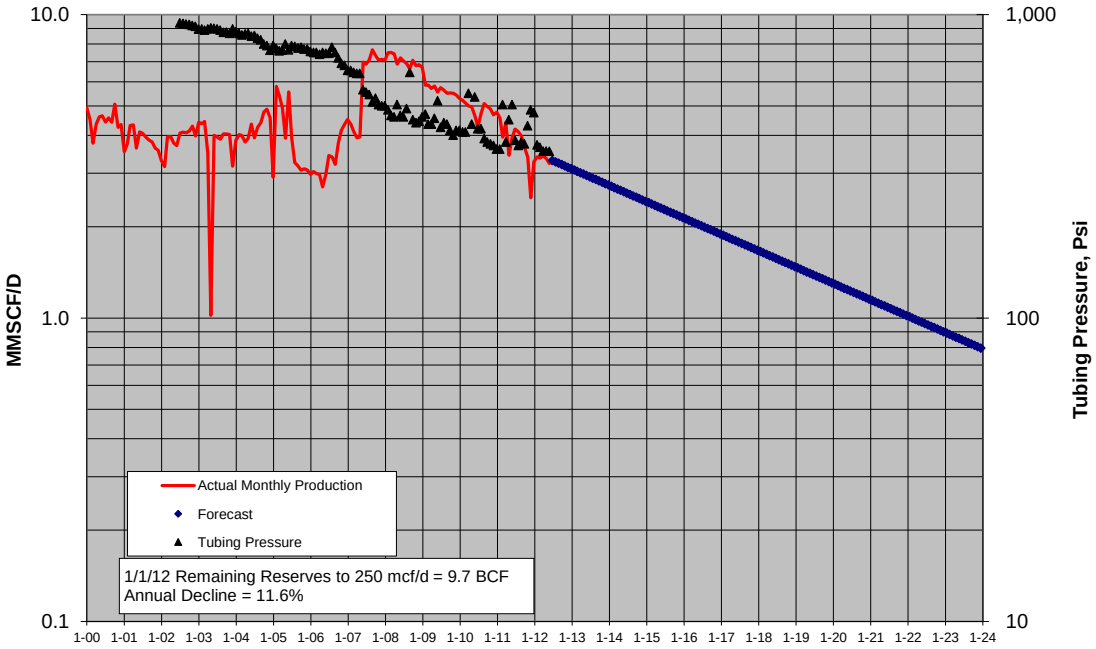
Beluga River Unit #232-23



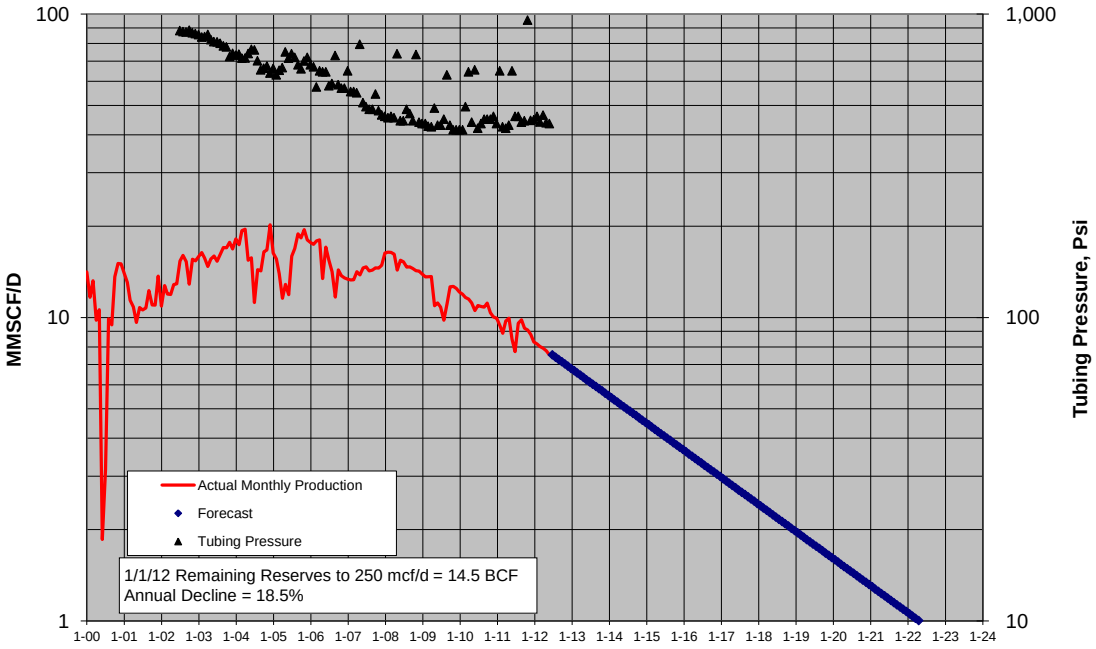
Beluga River Unit #232-26



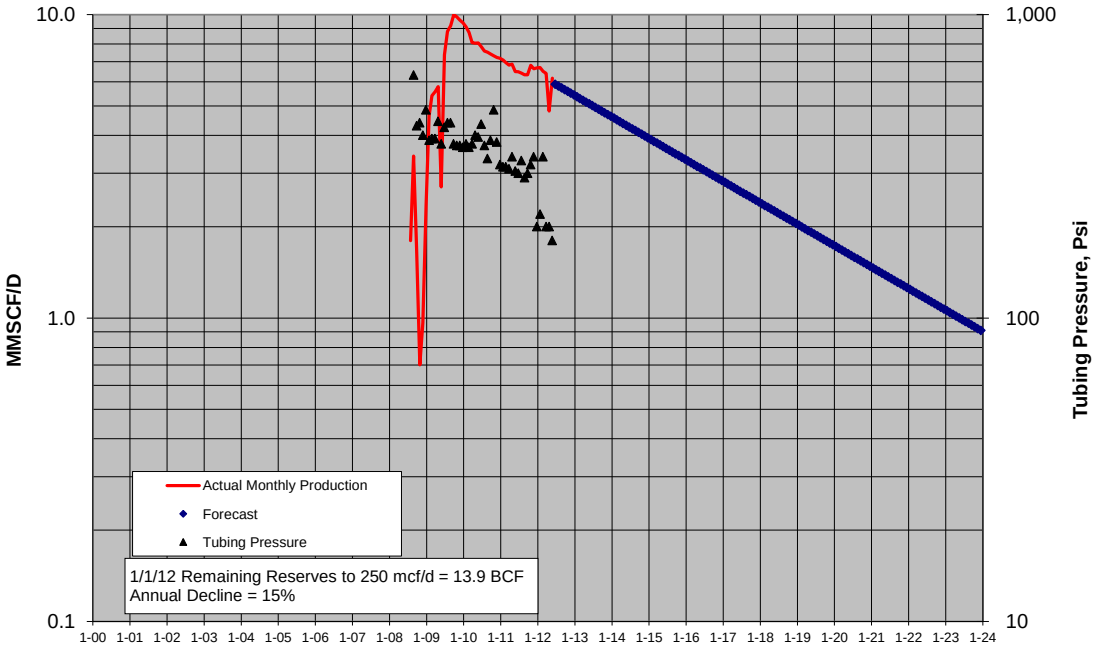
Beluga River Unit #233-27



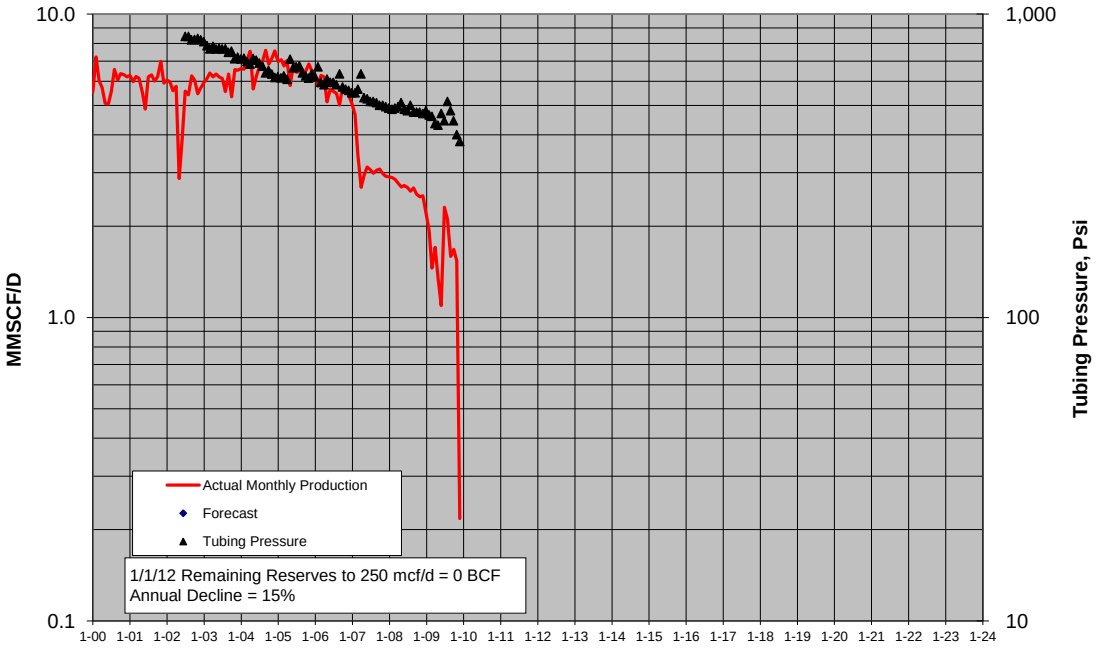
Beluga River Unit #241-34



Beluga River Unit #243-34

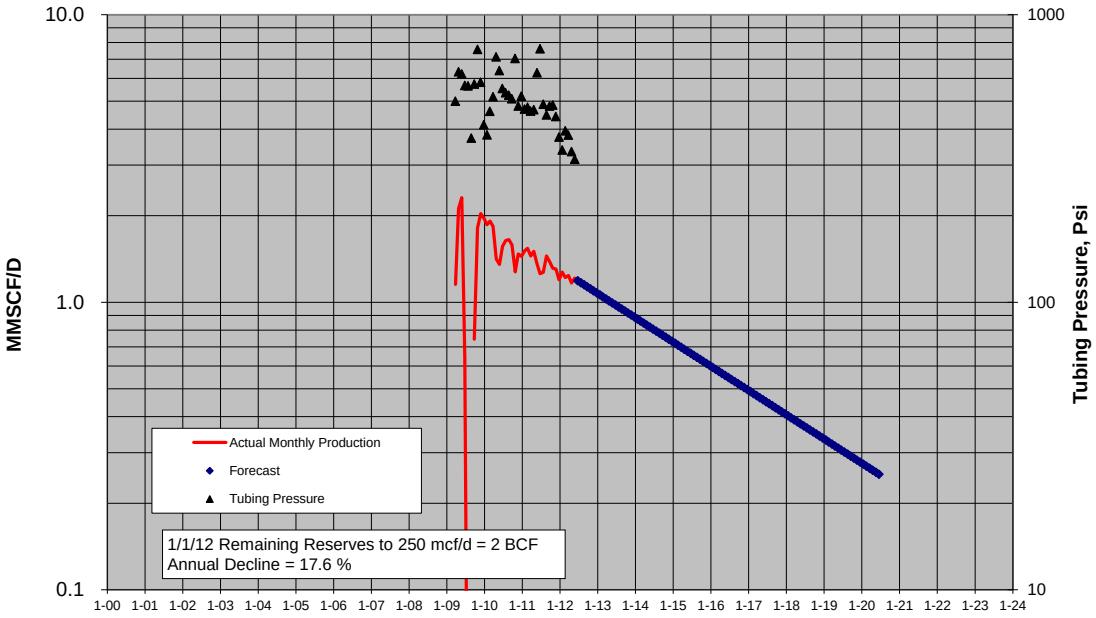


Beluga River Unit #244-04

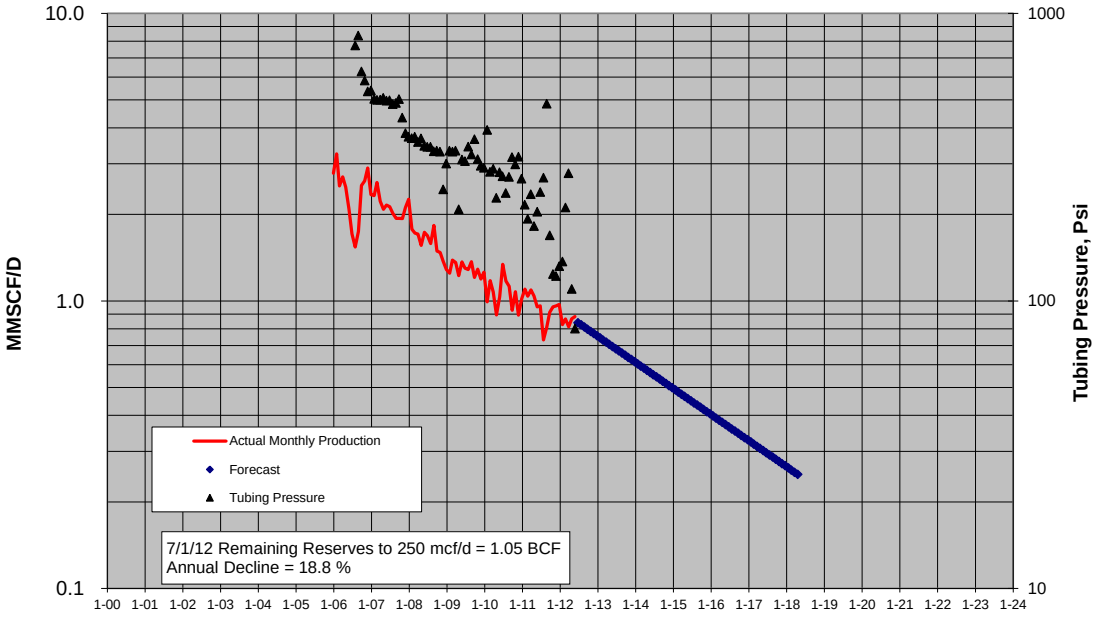


Appendix B-2: Kenai Unit Well Decline Curves

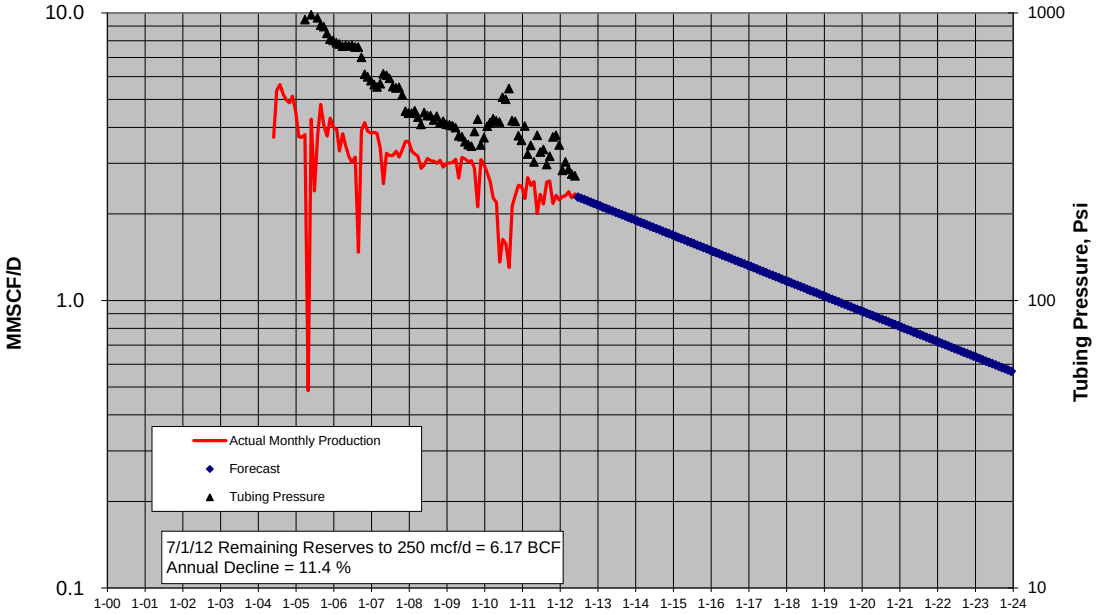
KENAI BELUGA UNIT 11-17X



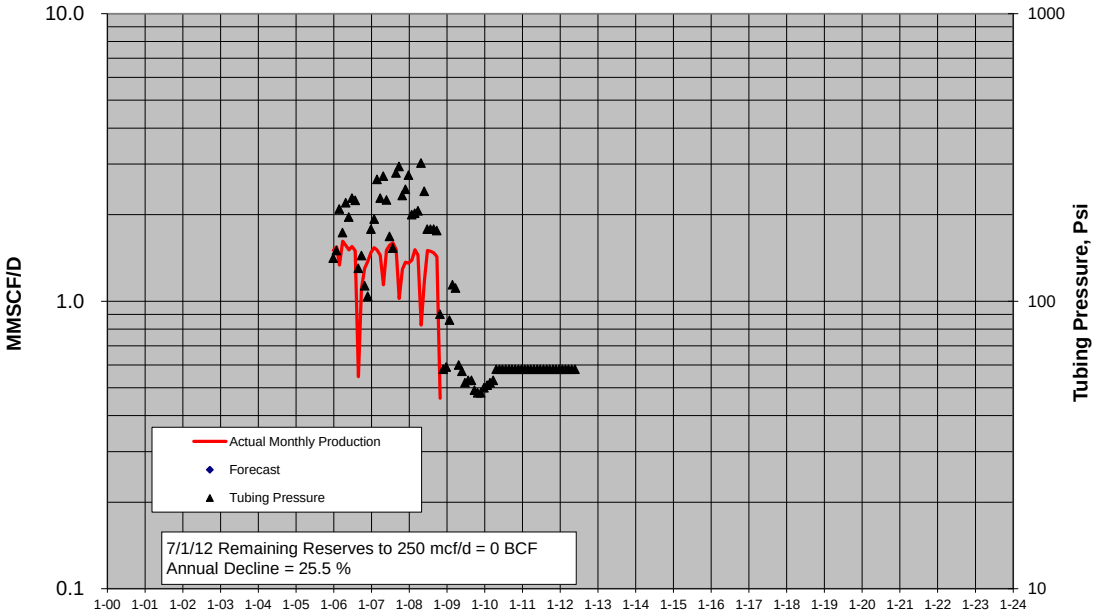
KENAI BELUGA UNIT 11-7



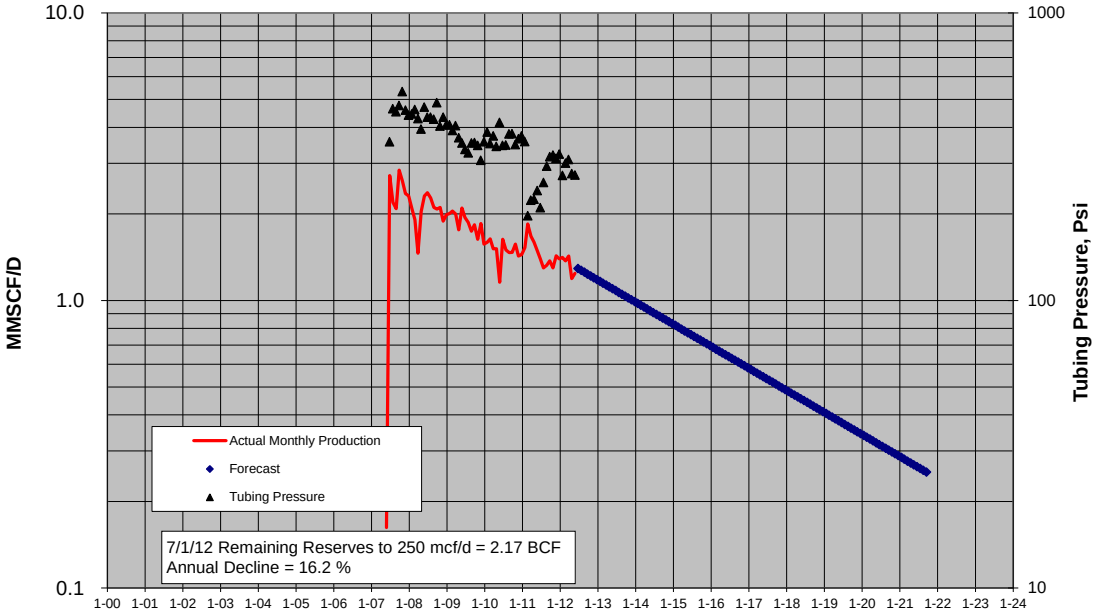
KENAI BELUGA UNIT 11-8X



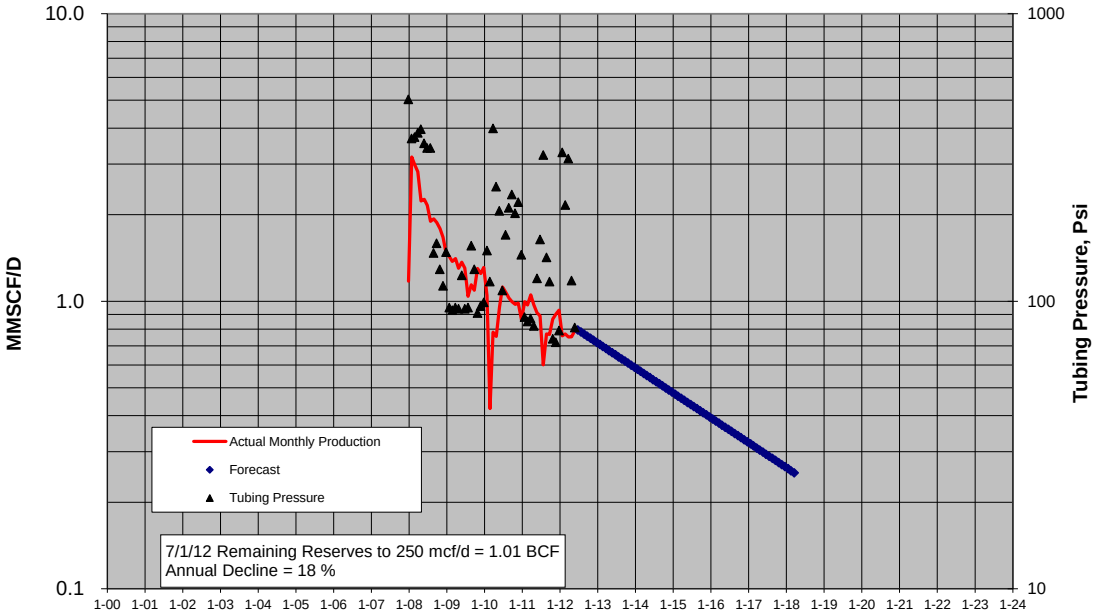
KENAI BELUGA UNIT 11-8Y



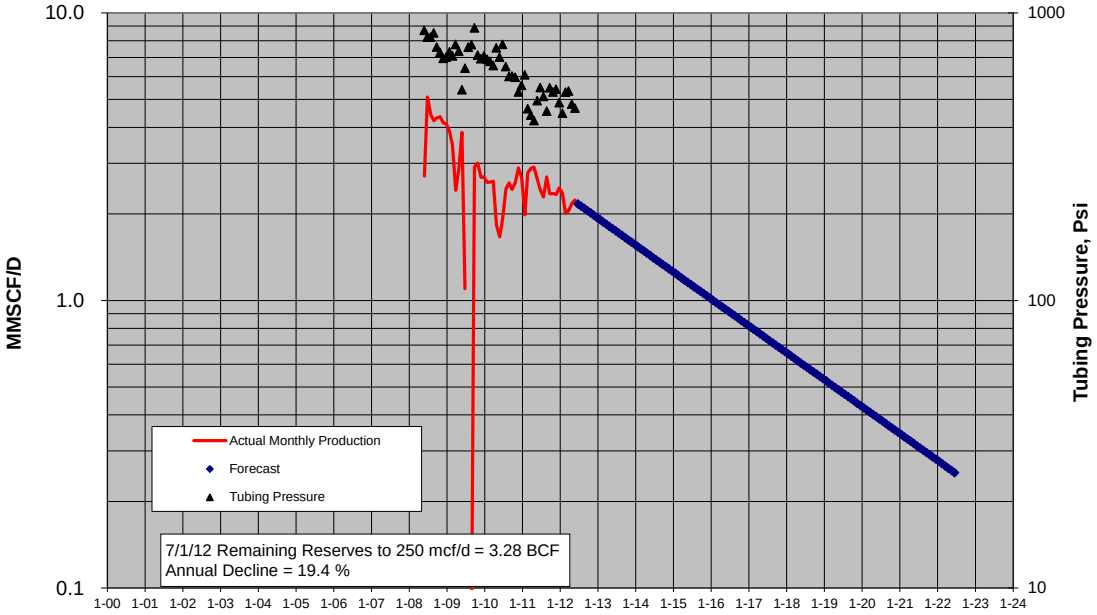
KENAI BELUGA UNIT 12-5



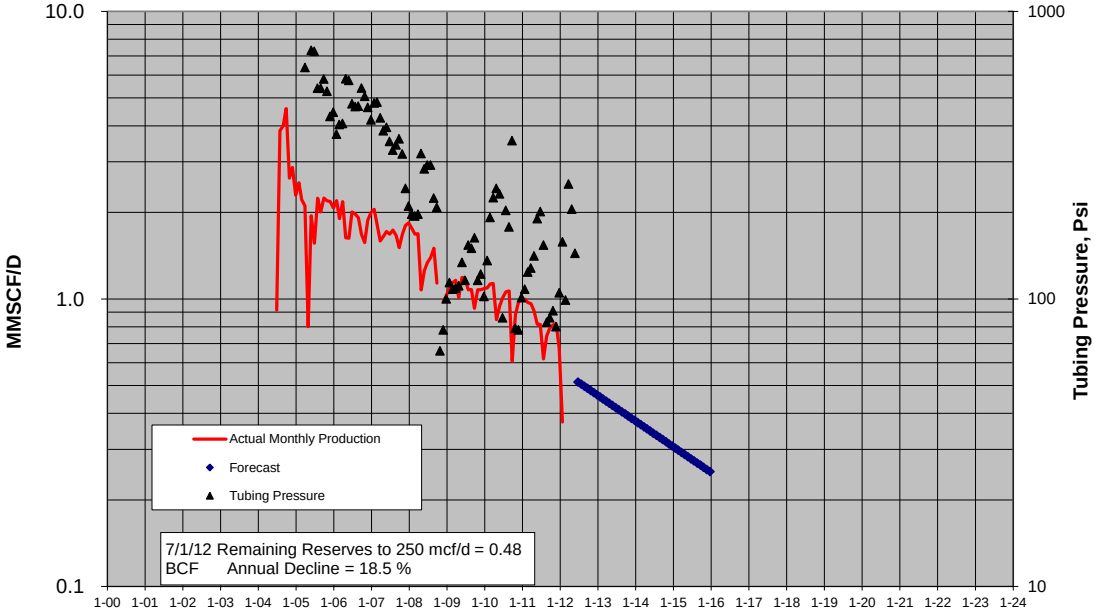
KENAI BELUGA UNIT 14-6Y



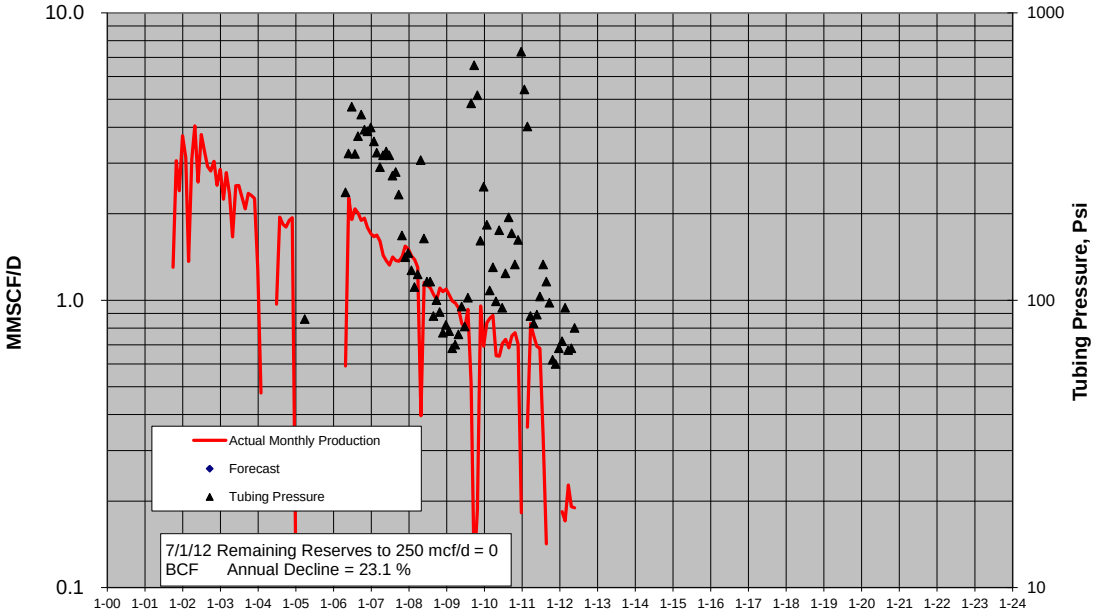
KENAI BELUGA UNIT 14-8



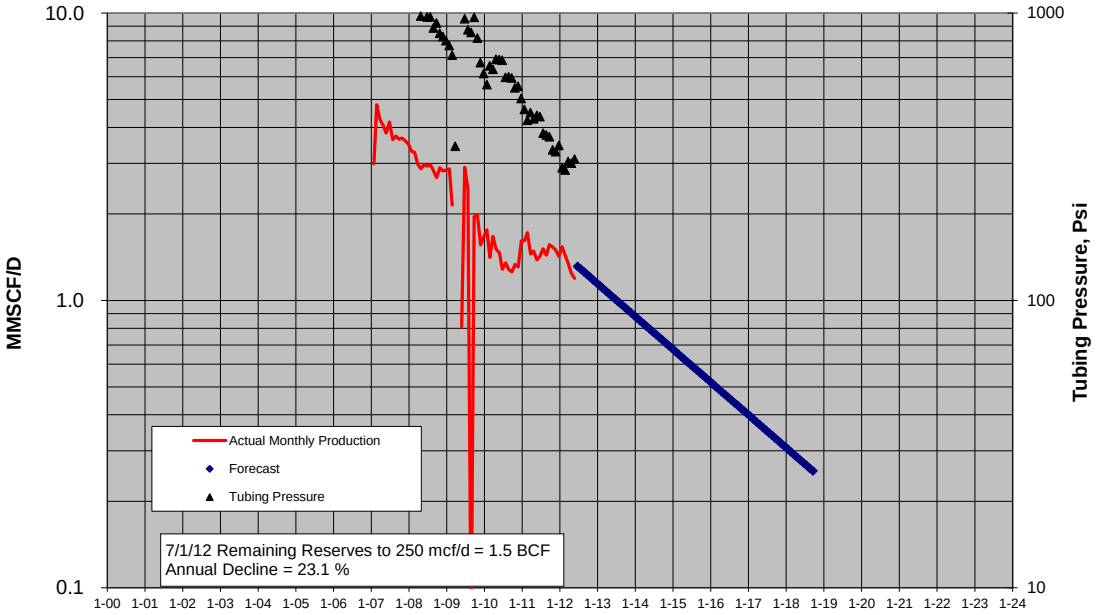
KENAI BELUGA UNIT 23-7



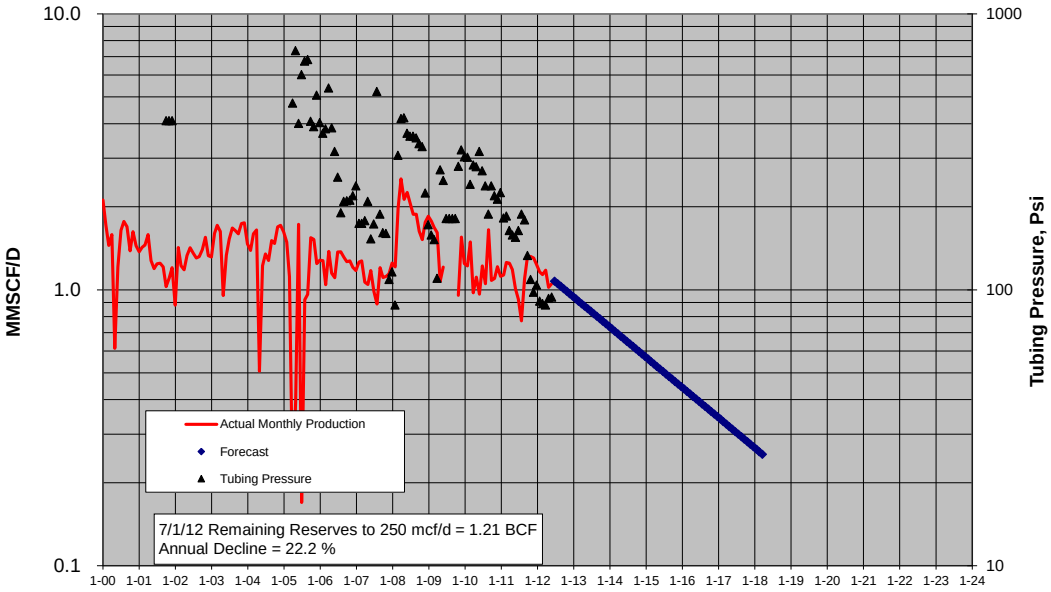
KENAI BELUGA UNIT 24-06RD



KENAI BELUGA UNIT 24-7X



KENAI BELUGA UNIT 31-07RD



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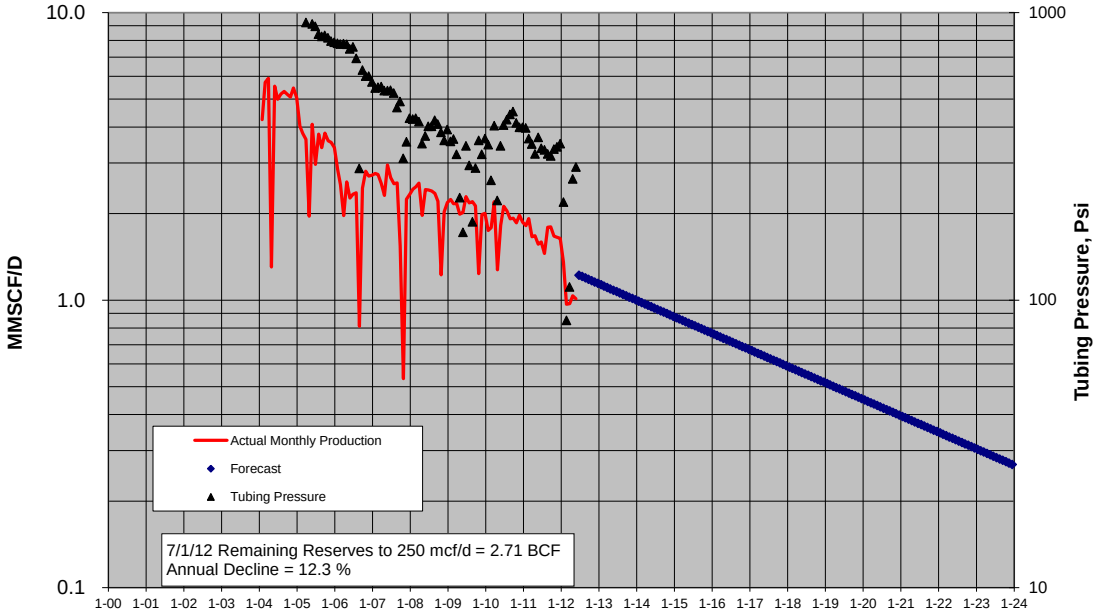
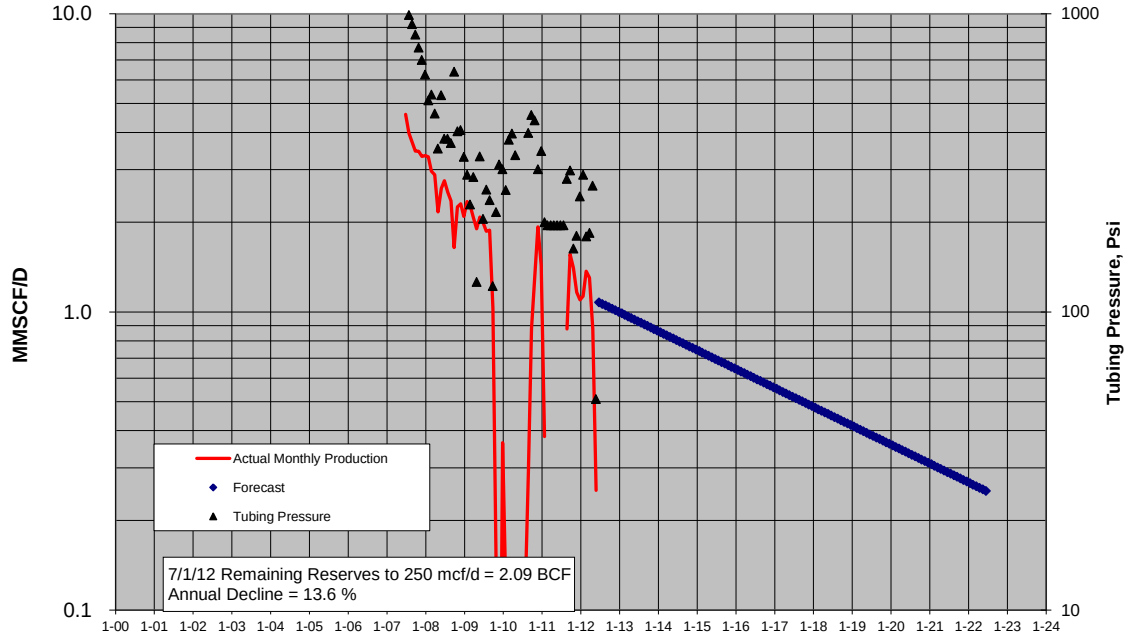
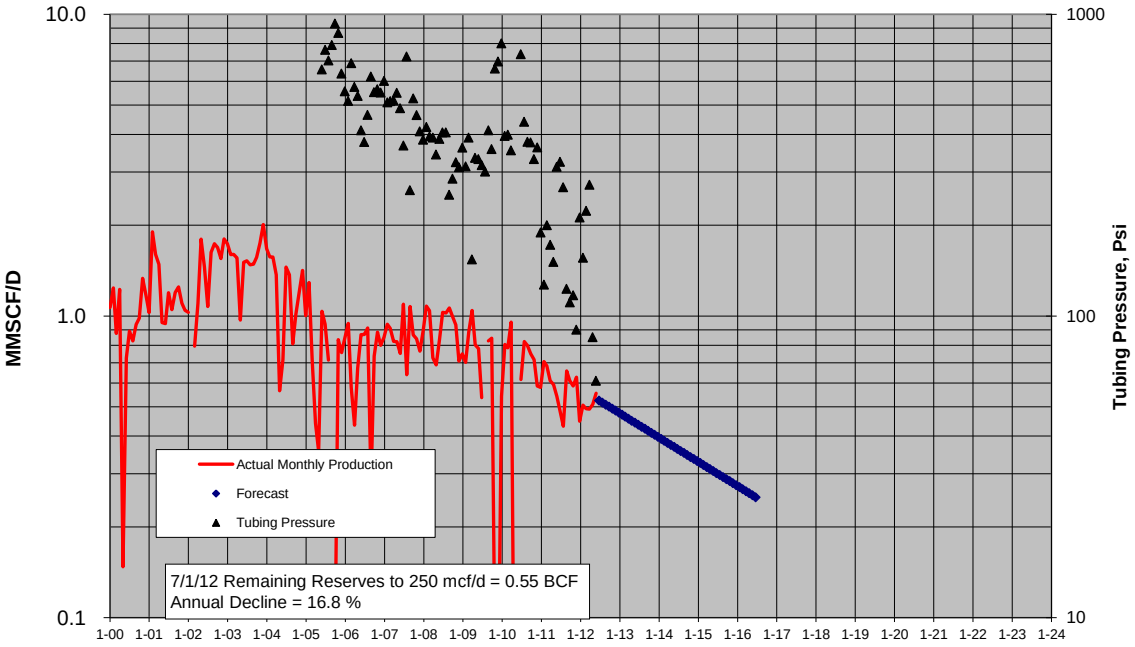


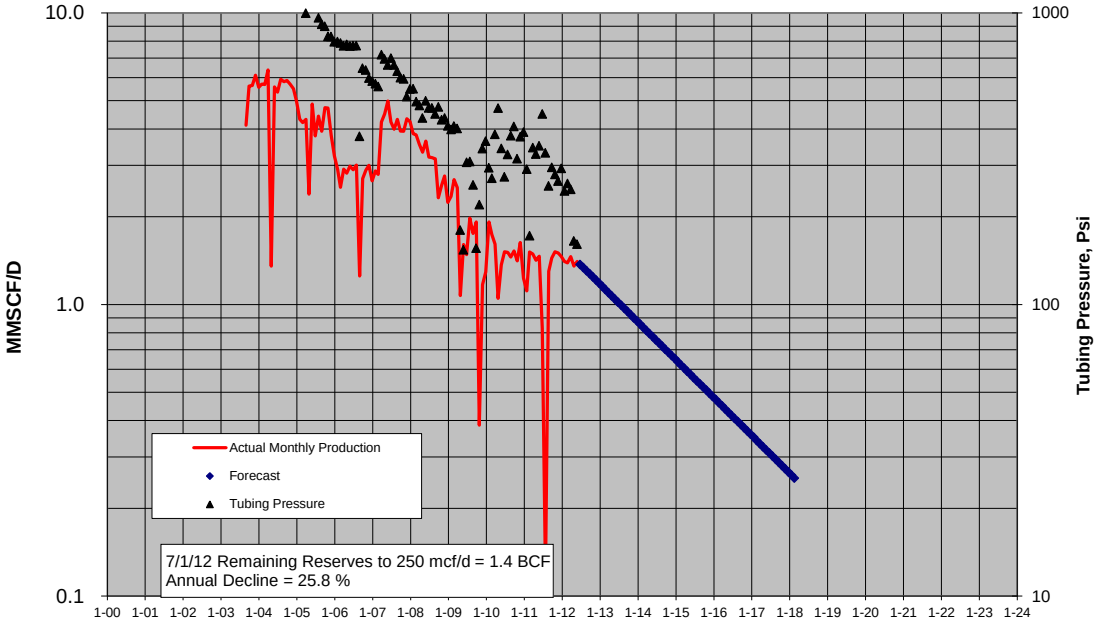
KENAI BELUGA UNIT 34-6



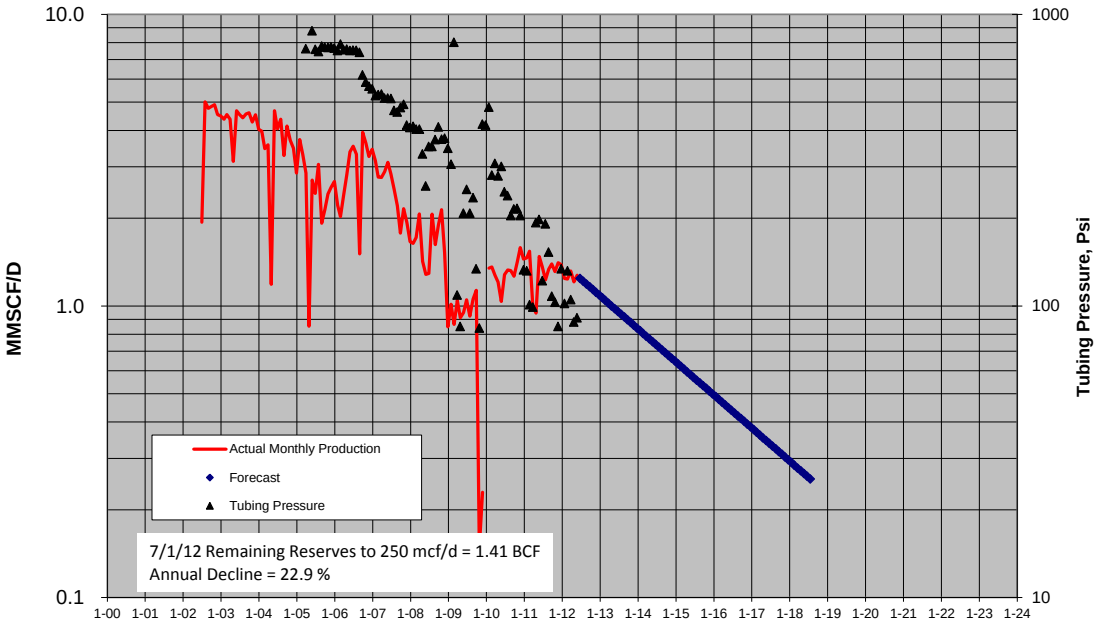
KENAI BELUGA UNIT 41-07



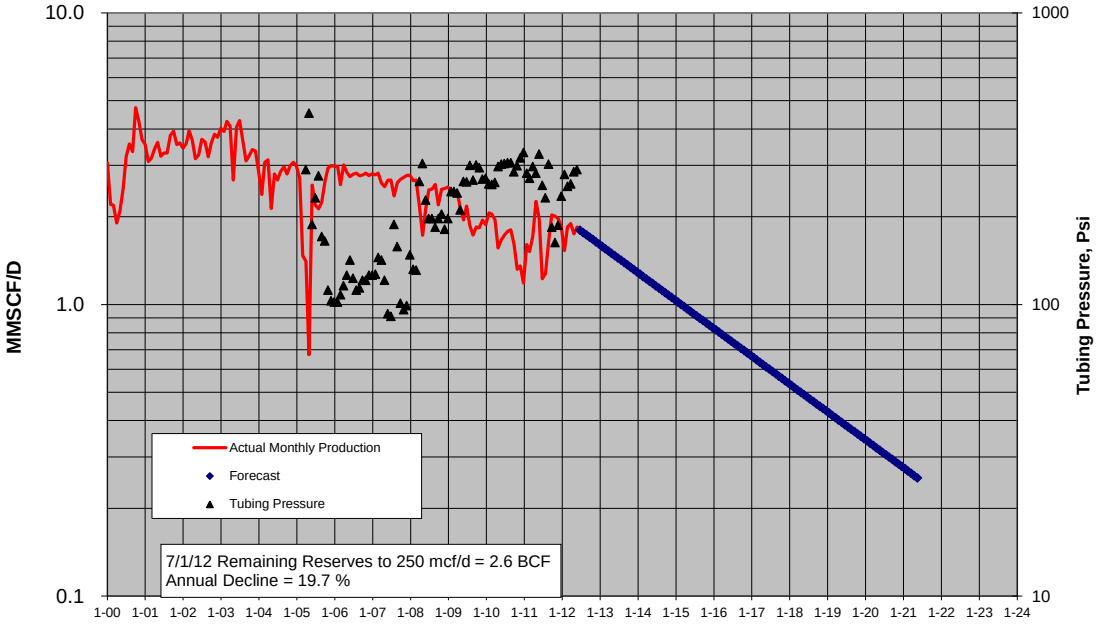
KENAI BELUGA UNIT 43-07X



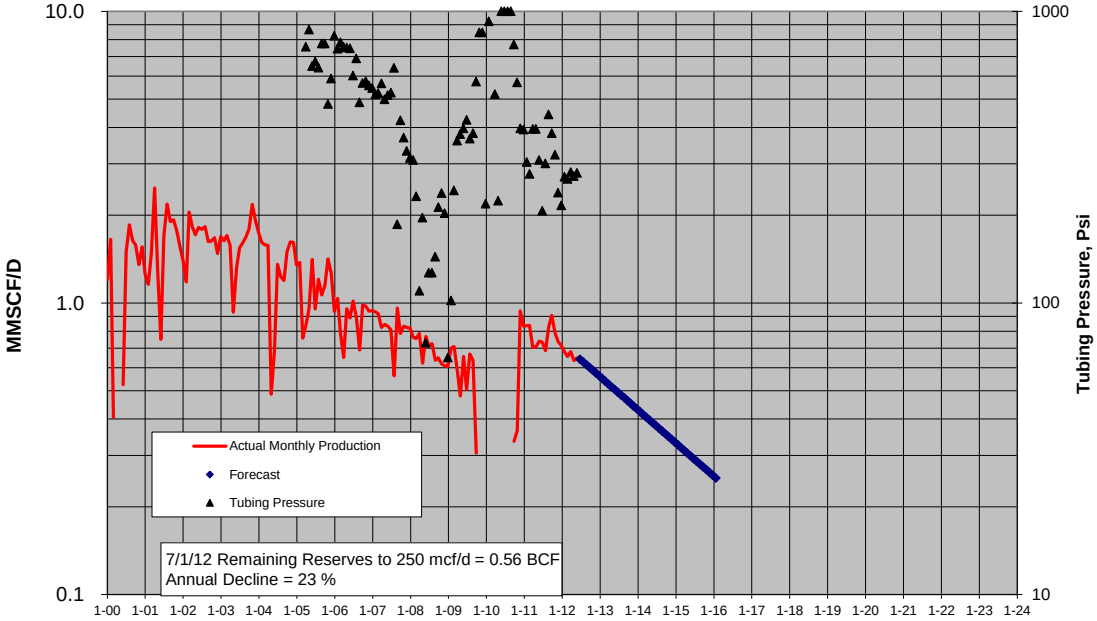
KENAI BELUGA UNIT 44-06



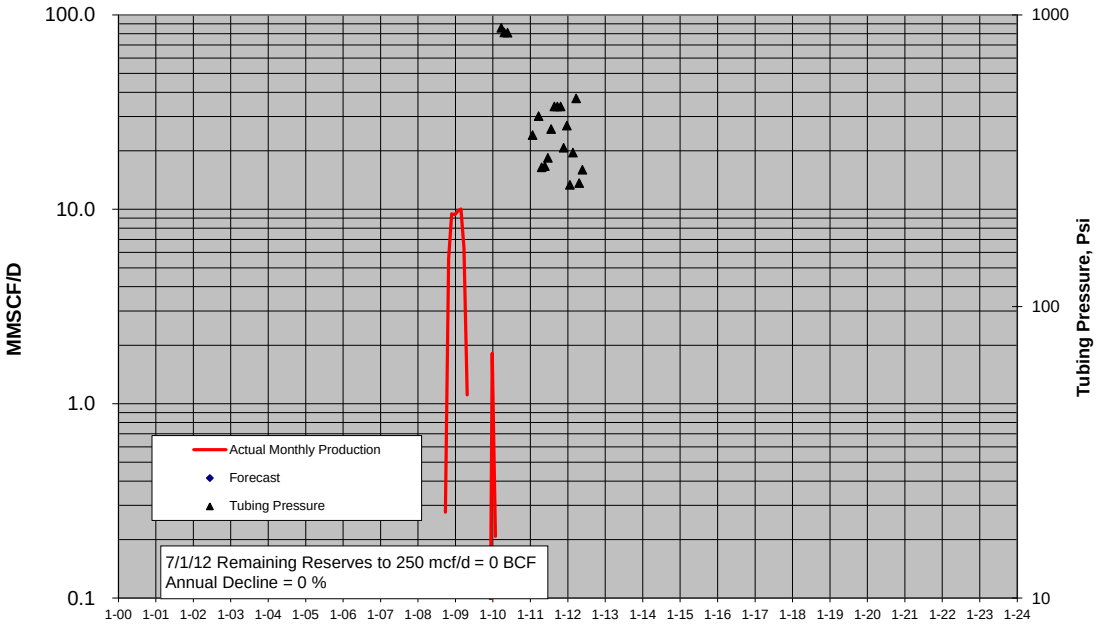
KENAI DEEP UNIT 1



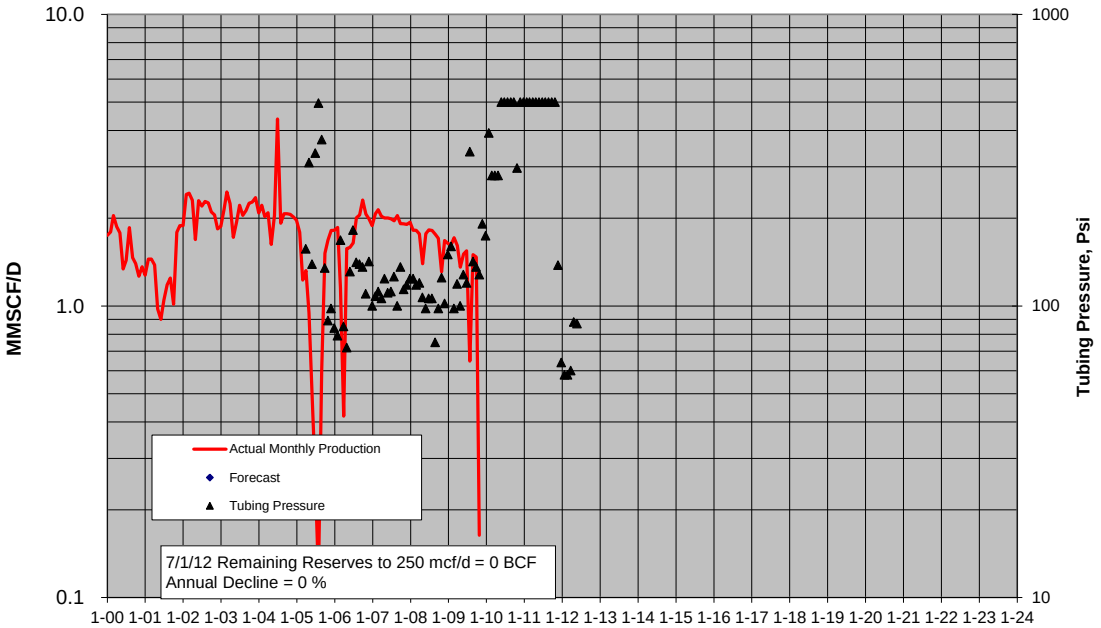
KENAI DEEP UNIT 2(21-8)



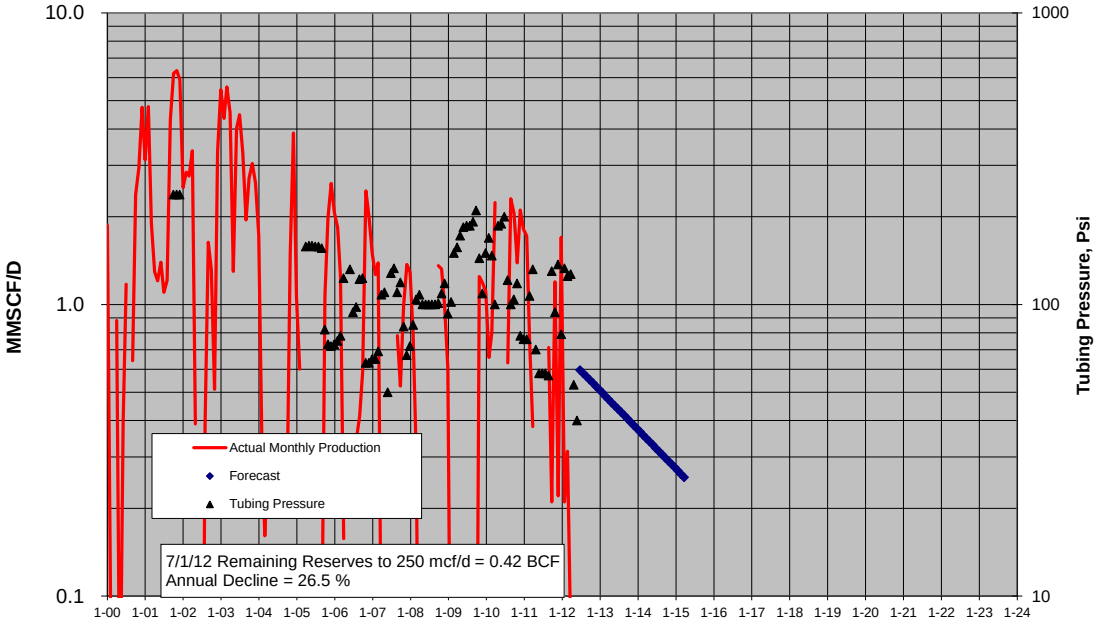
KENAI DEEP UNIT 9



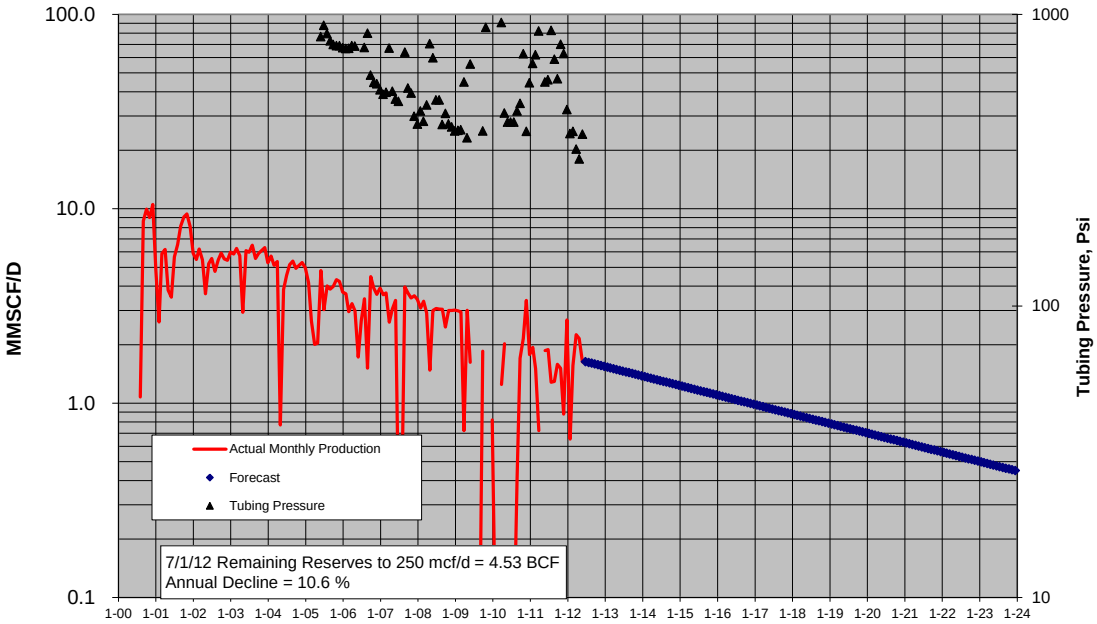
KENAI TYONEK UNIT 13-05



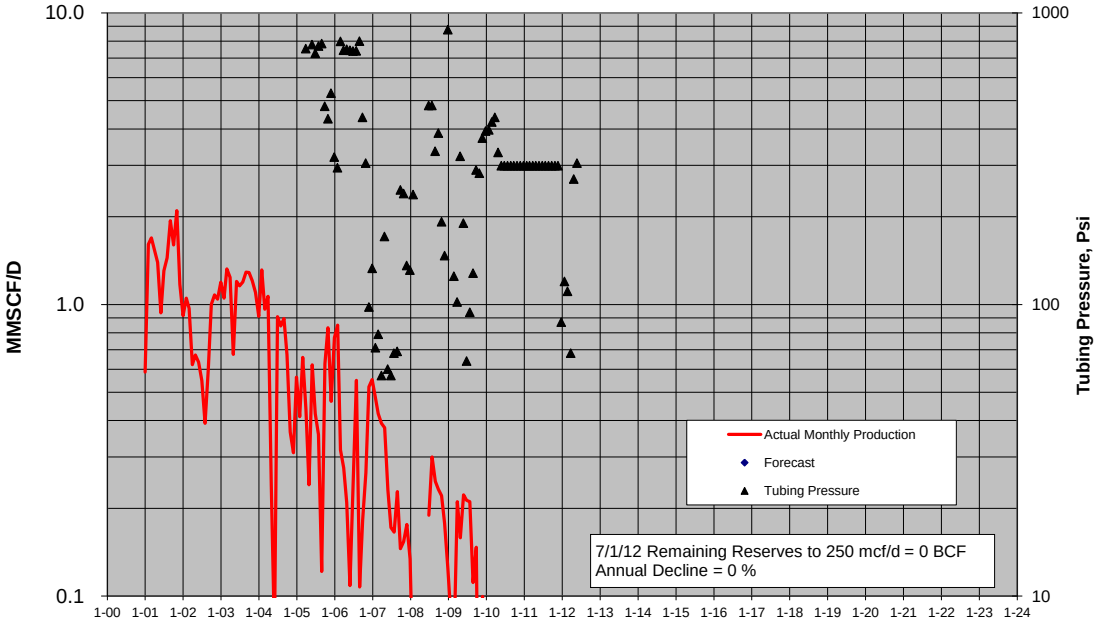
KENAI TYONEK UNIT 13-06



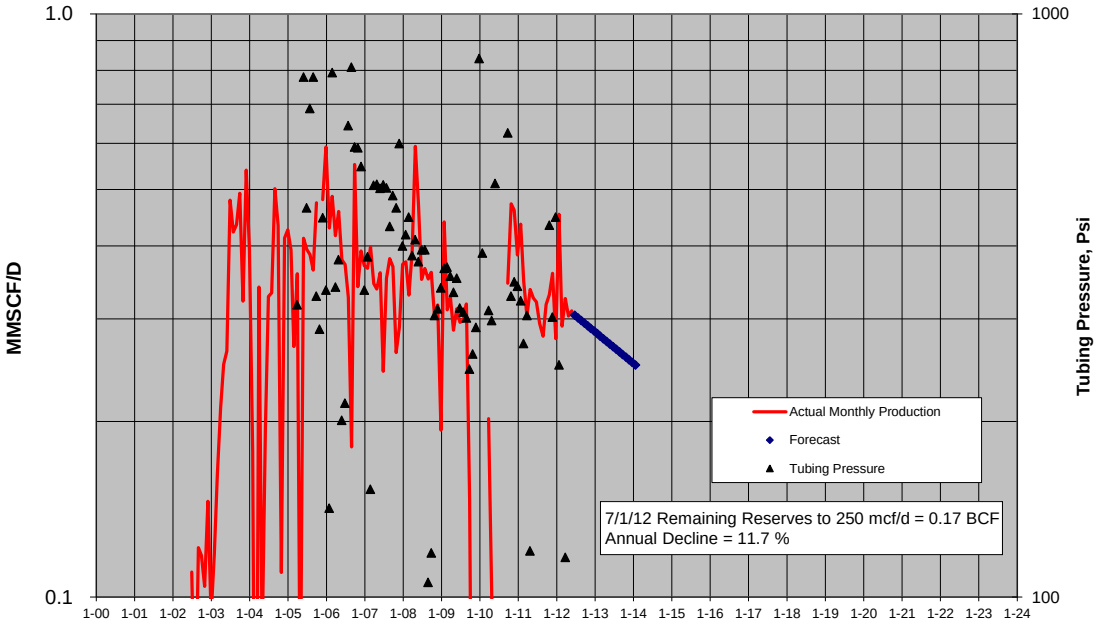
KENAI TYONEK UNIT 24-06H



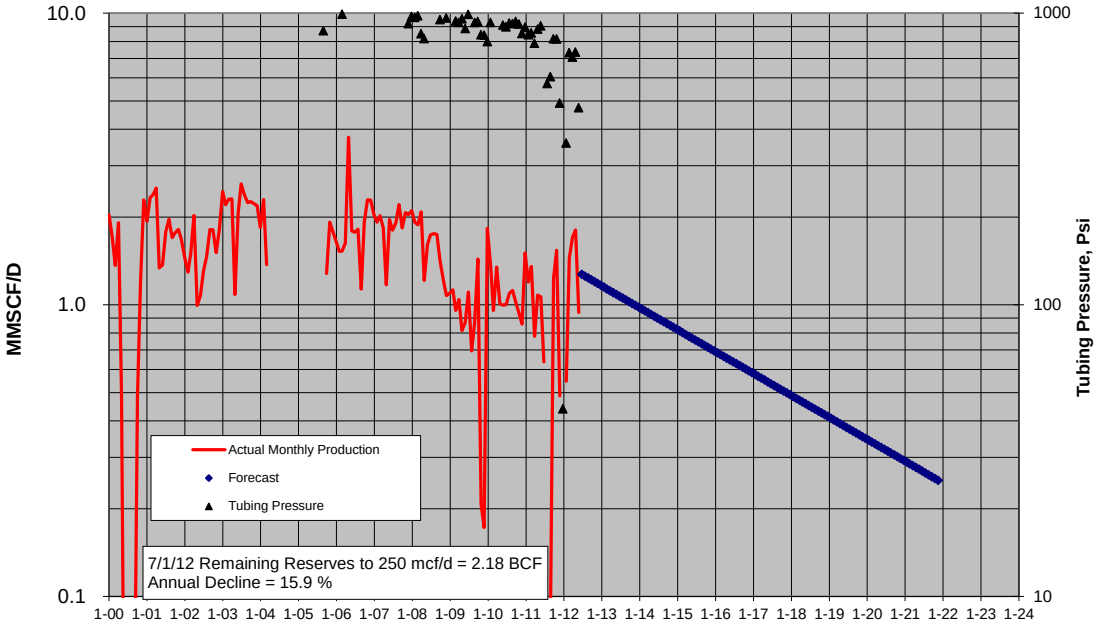
KENAI TYONEK UNIT 32-07



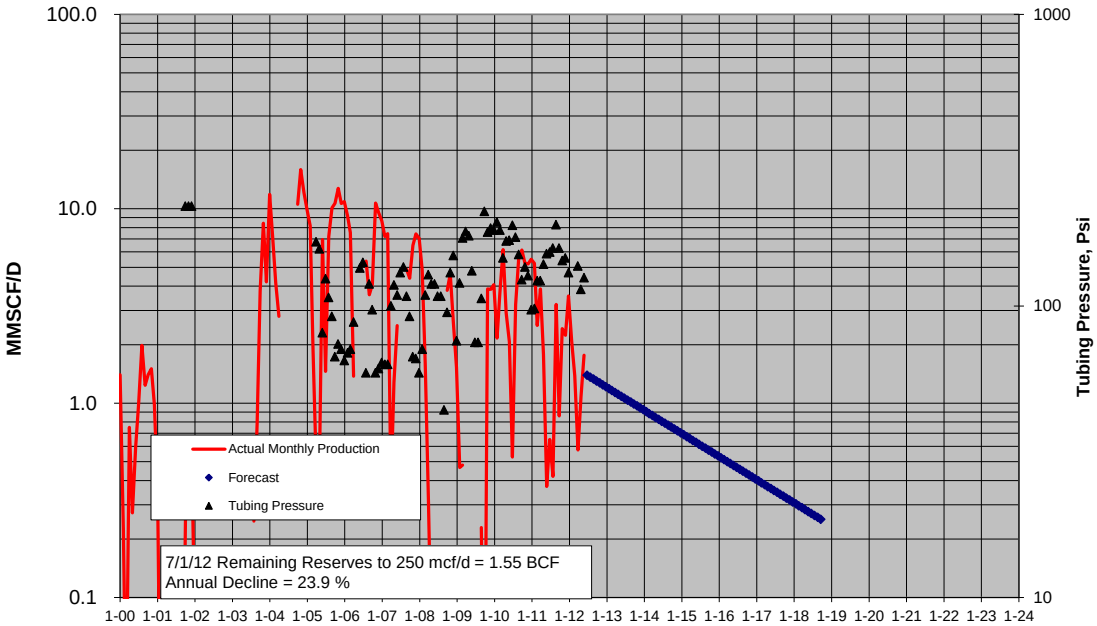
KENAI TYONEK UNIT 32-07H



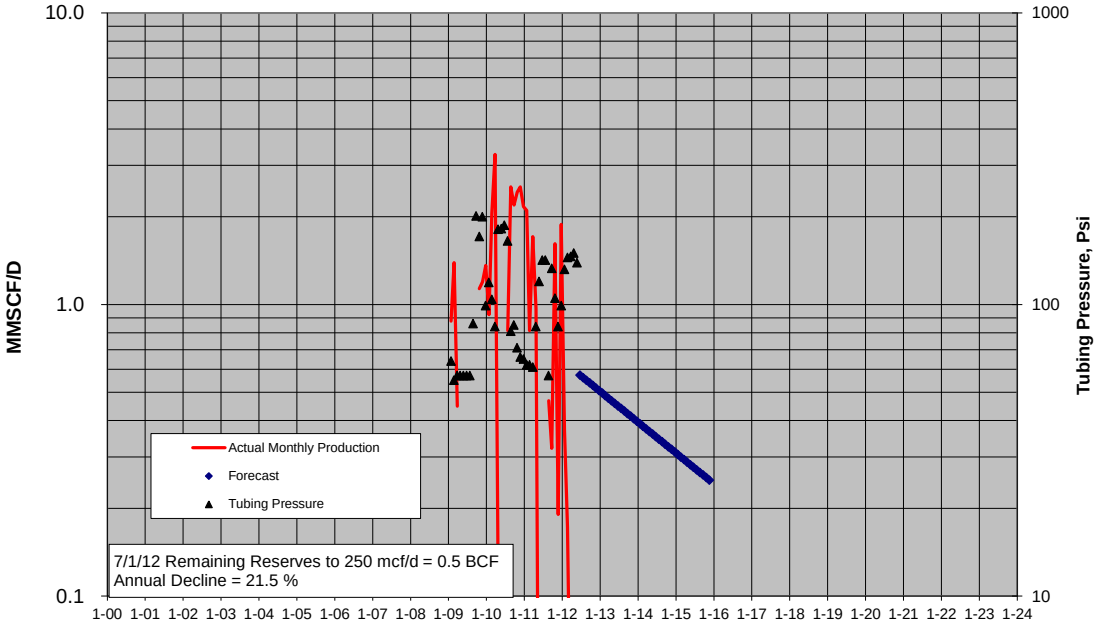
KENAI TYONEK UNIT 43-6XRD2



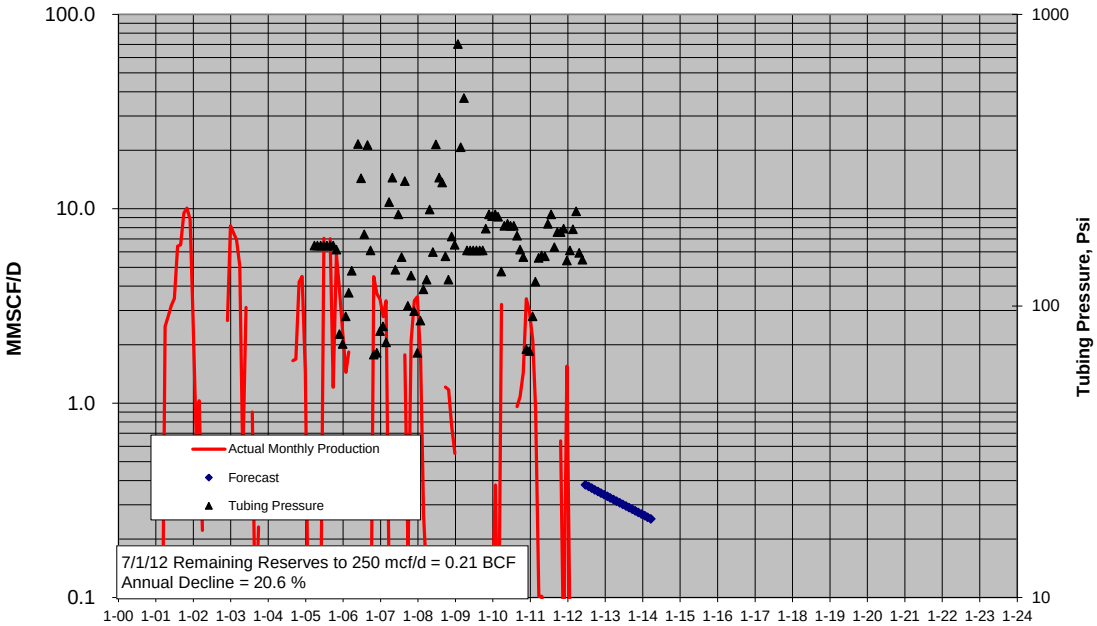
KENAI UNIT 14X-06



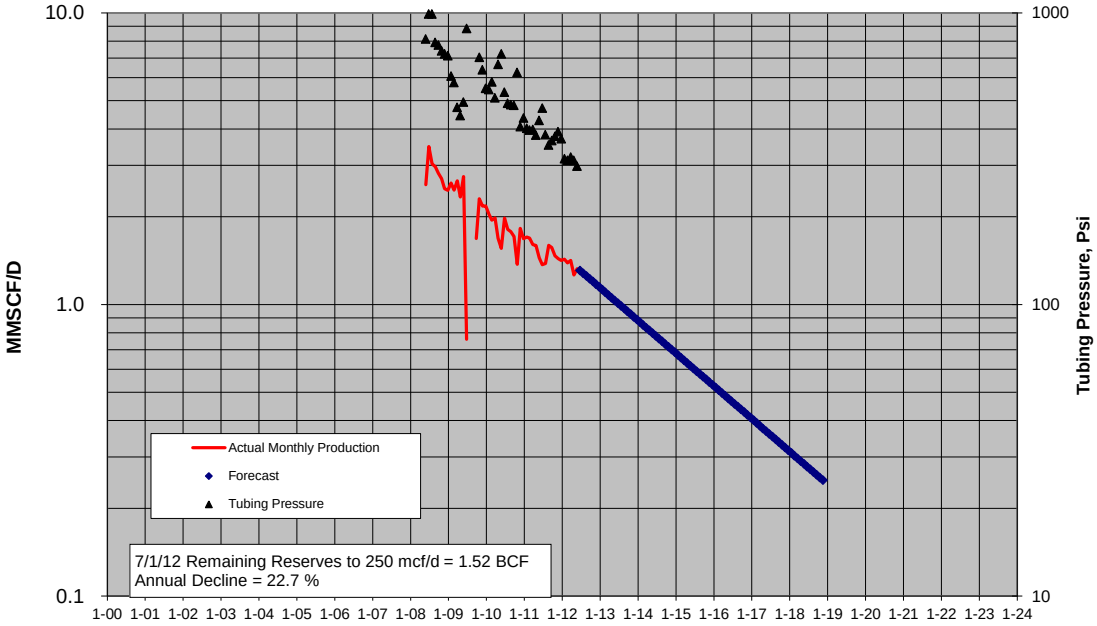
KENAI UNIT 22-6X



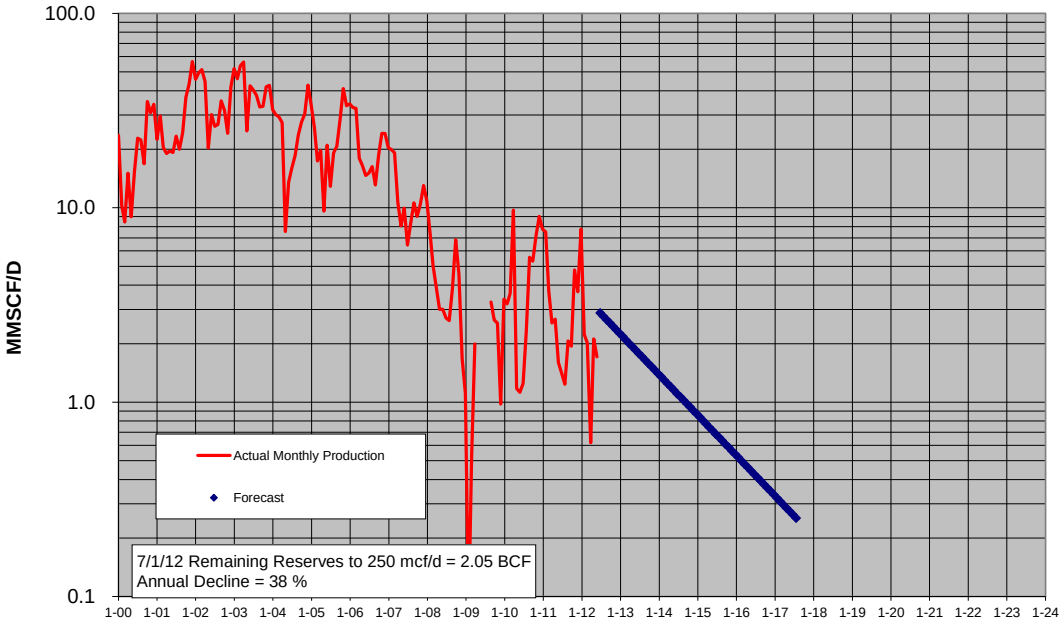
KENAI UNIT 31-07X



KENAI UNIT 41-18X

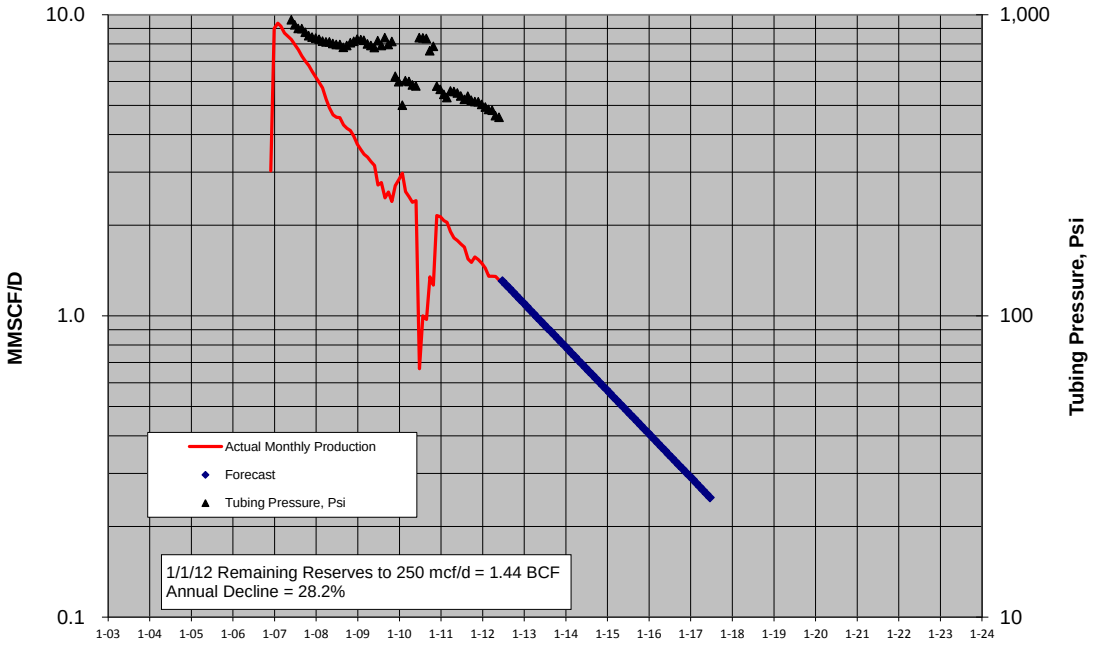


Other KU Wells

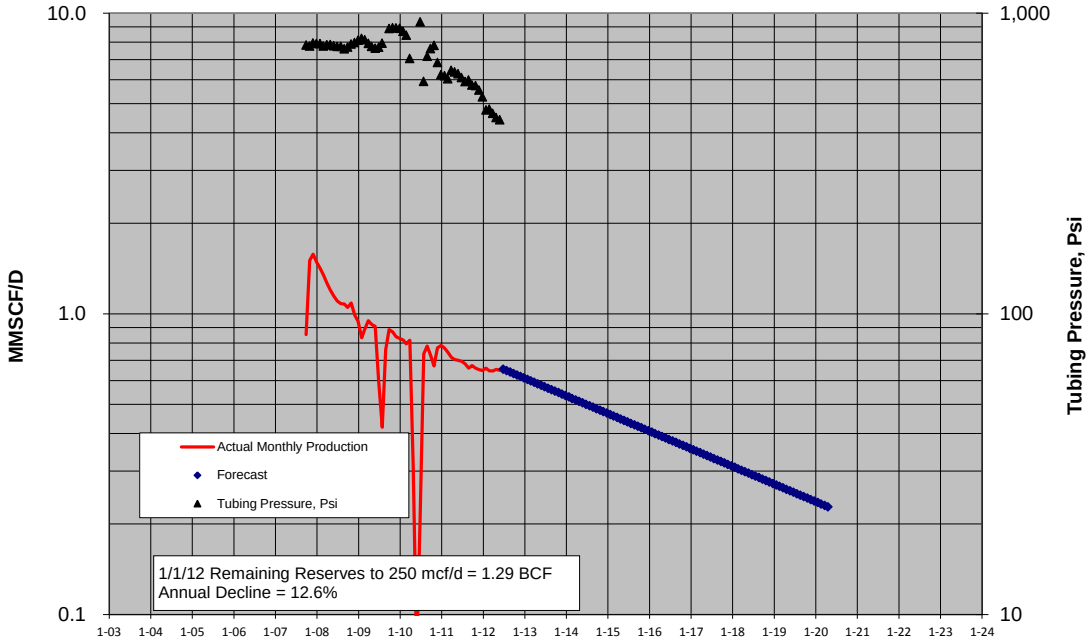


Appendix B-3: Ninilchik Unit Well Decline Curves

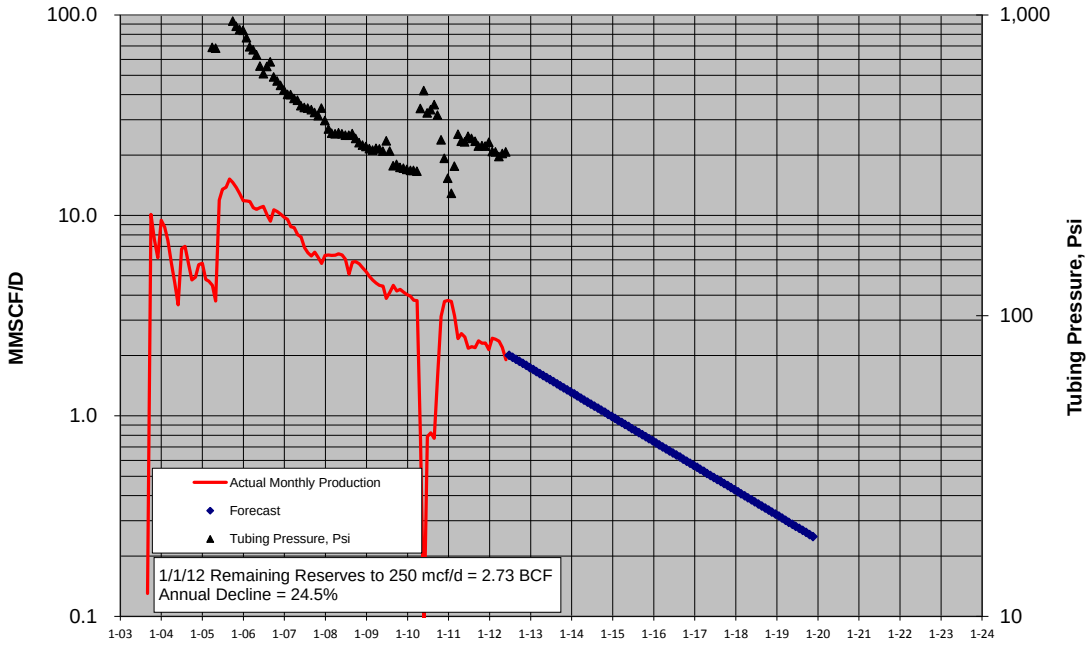
NINILCHIK STATE #1



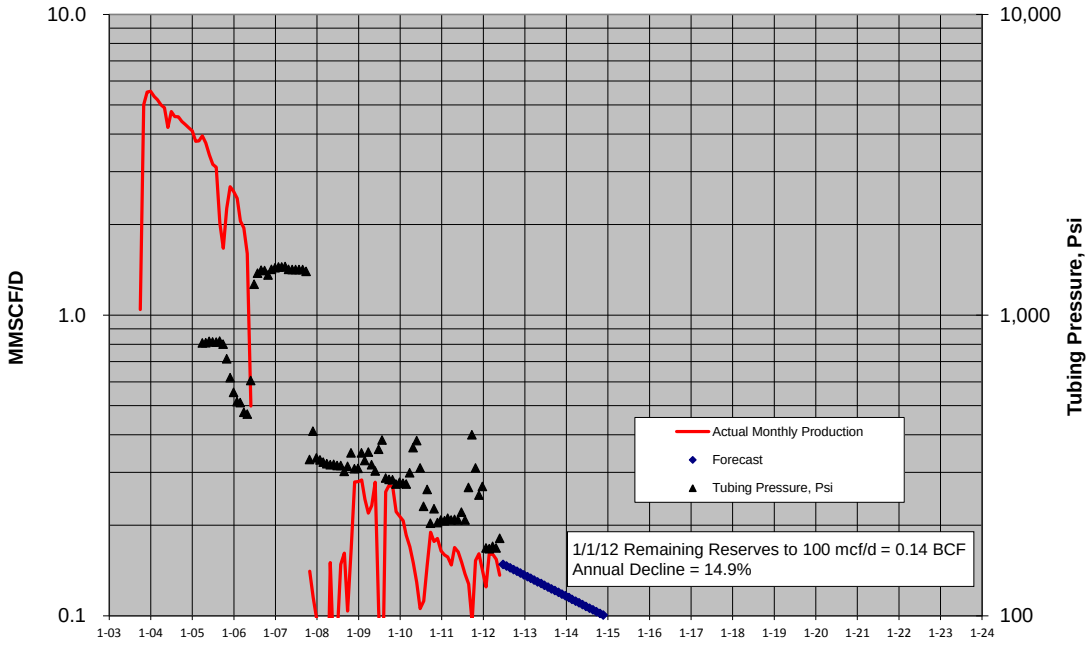
NINILCHIK STATE #3



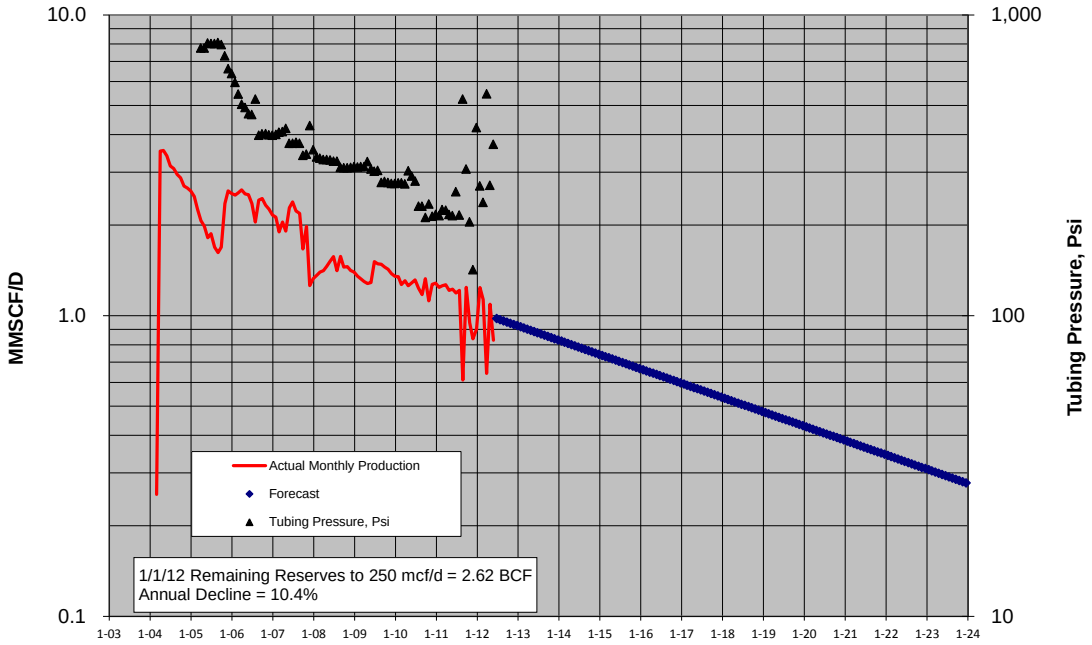
NINILCHIK UNIT FALLS CK #1RD



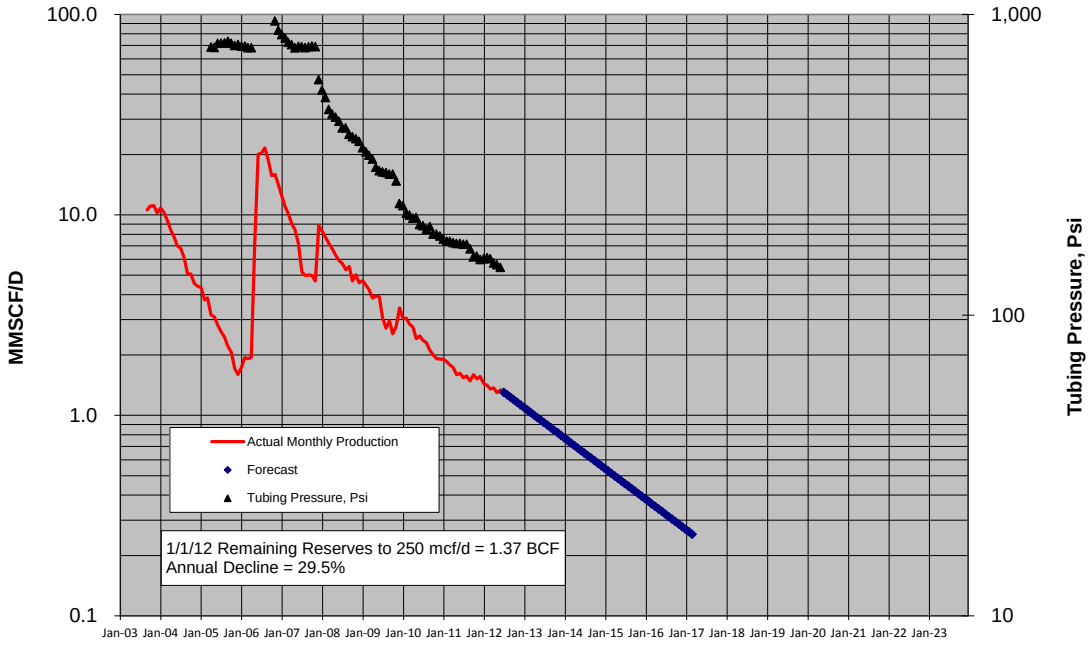
NINILCHIK UNIT FALLS CK #3



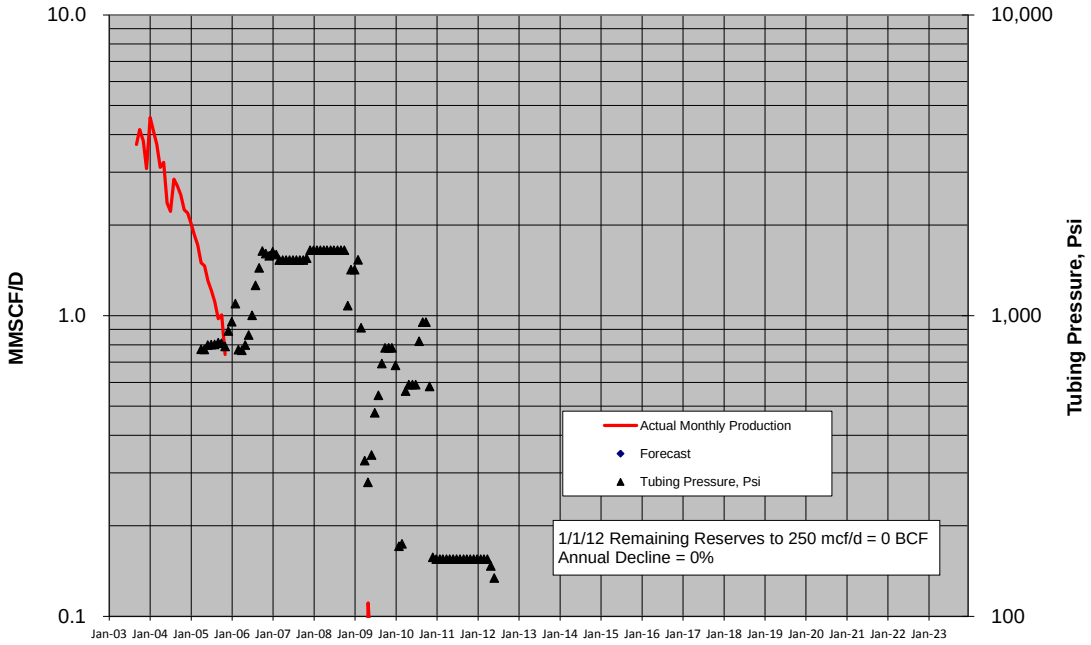
NINILCHIK UNIT FALLS CK #4



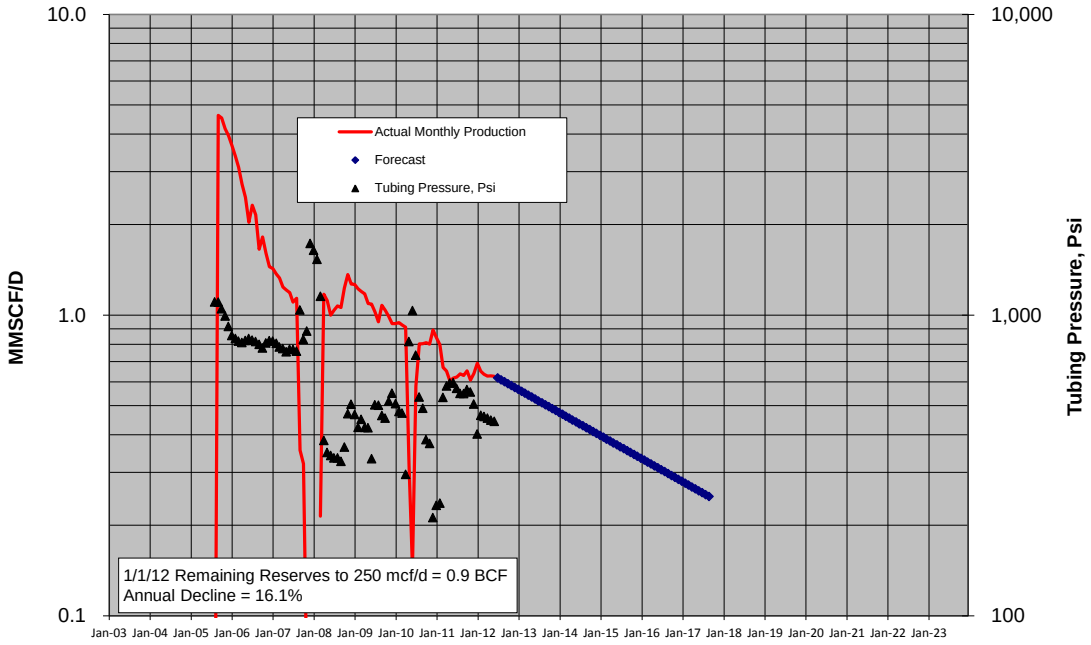
NINILCHIK UNIT G OSKOLKOFF #1



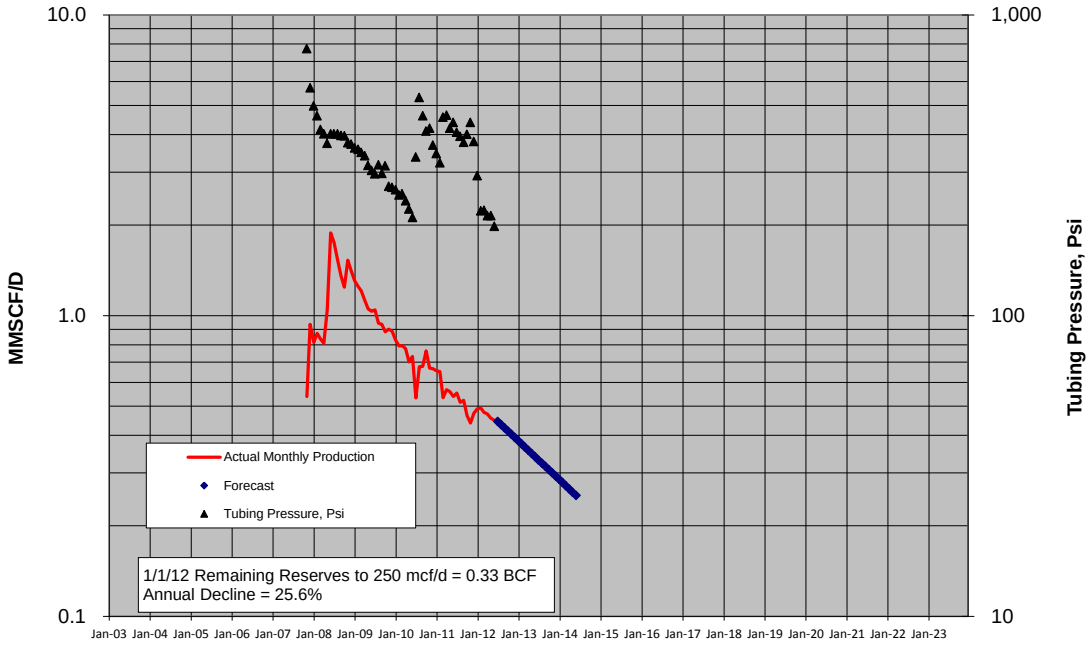
NINILCHIK UNIT G OSKOLKOFF #2



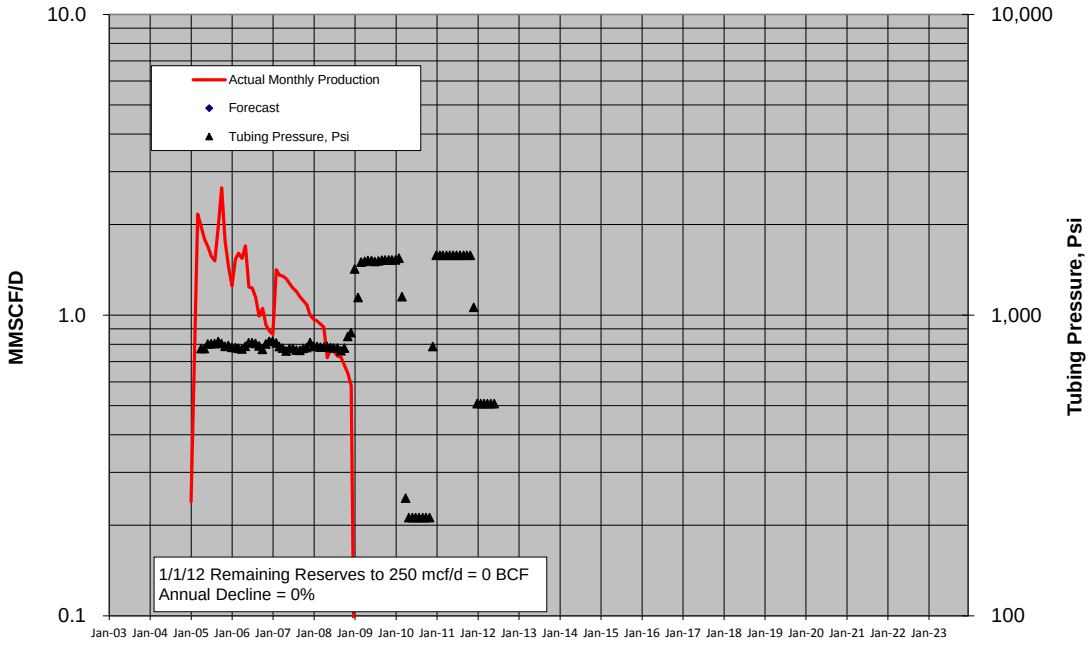
NINILCHIK UNIT G OSKOLKOFF #3



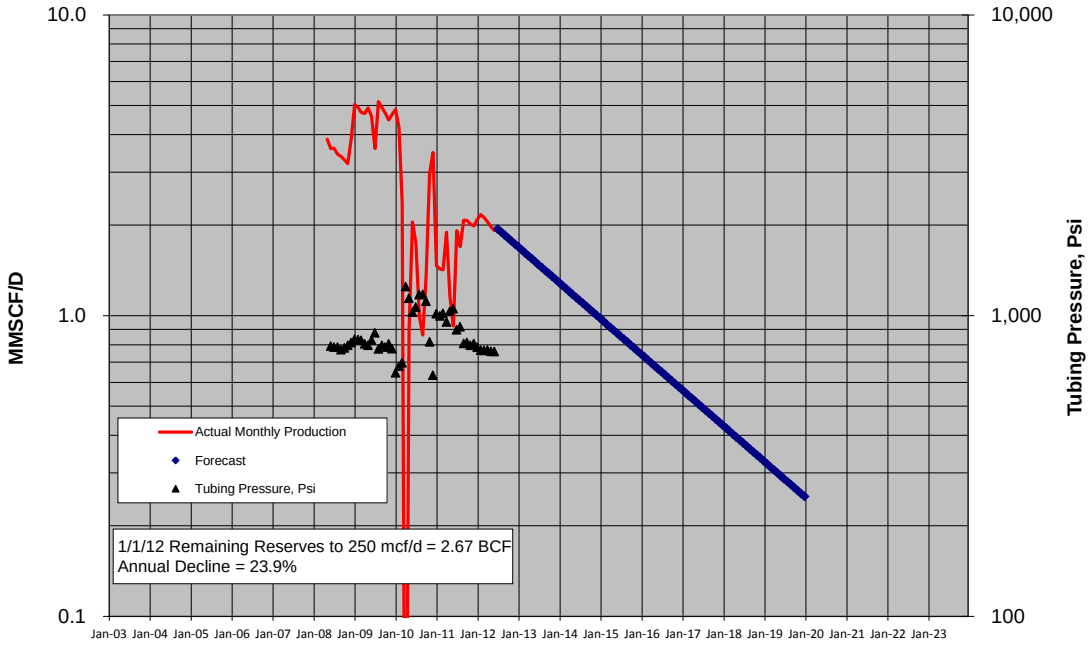
NINILCHIK UNIT G OSKOLKOFF #6



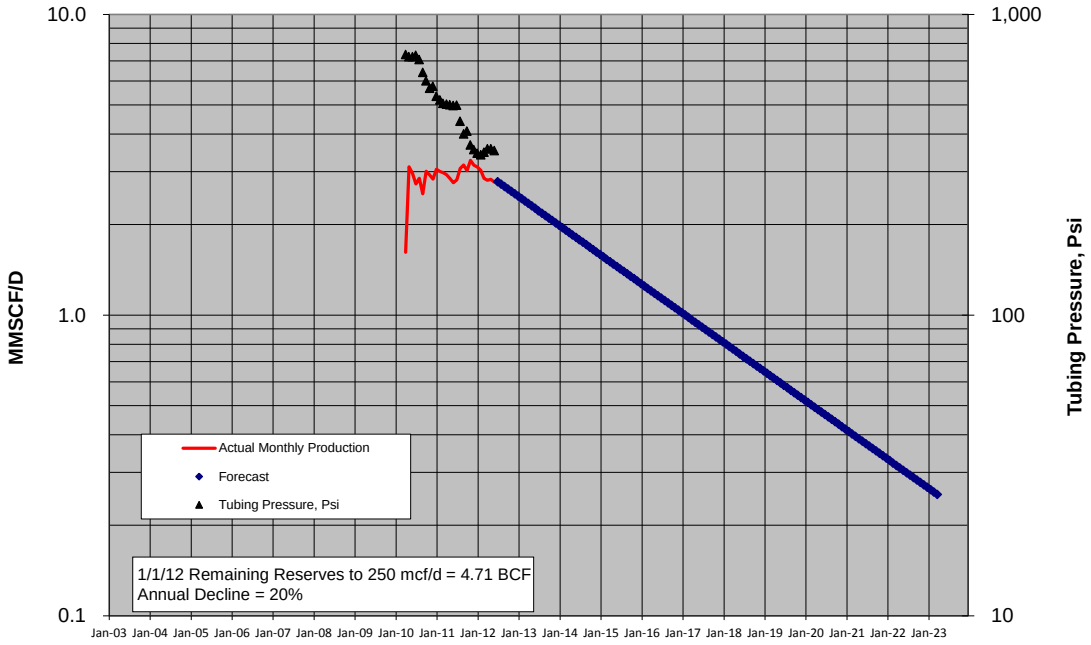
NINILCHIK UNIT PAXTON #1



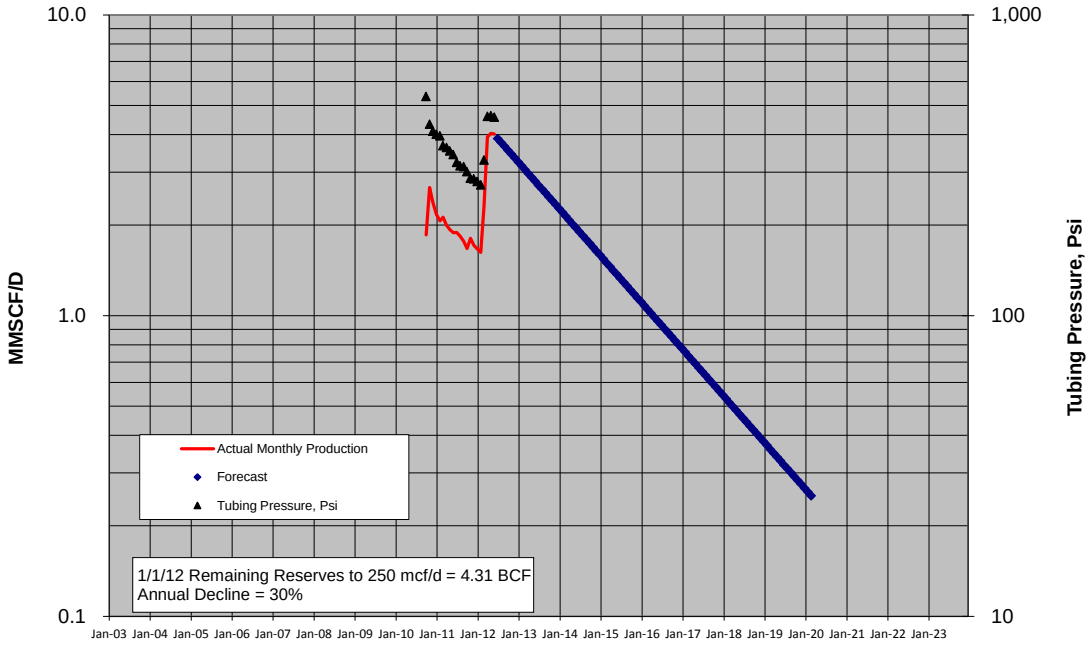
NINILCHIK UNIT PAXTON #2



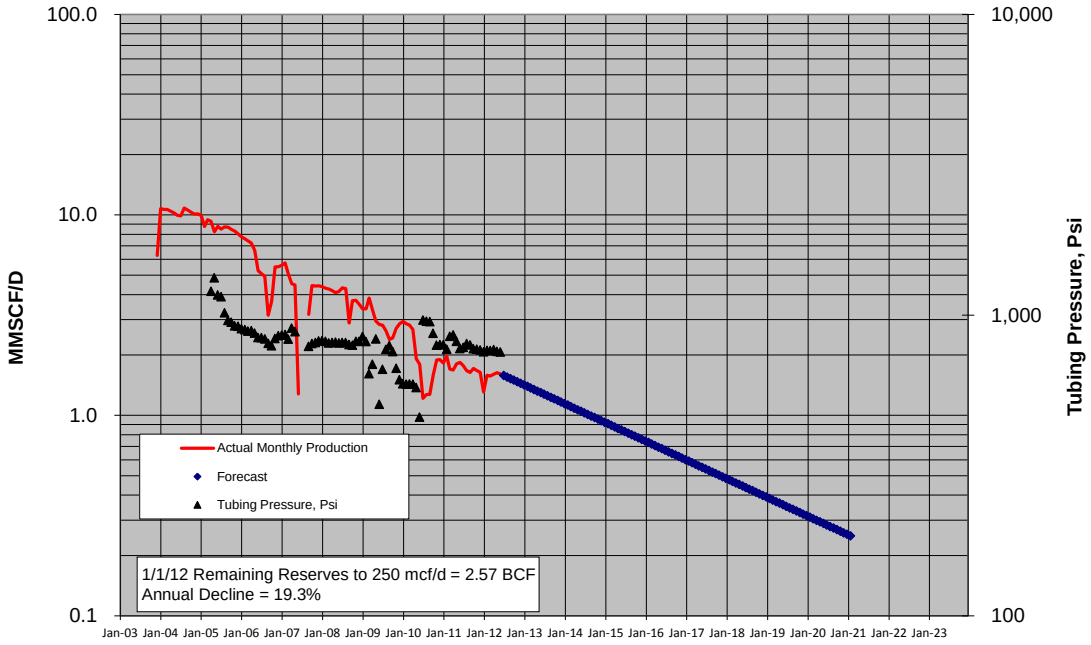
NINILCHIK UNIT PAXTON #3



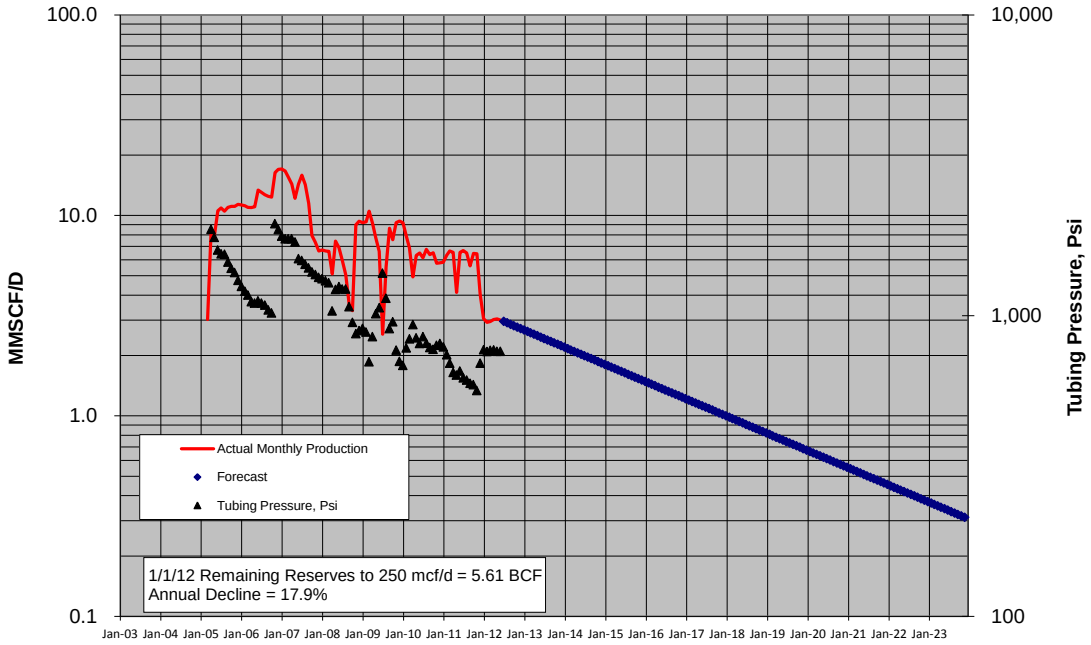
NINILCHIK UNIT PAXTON #4



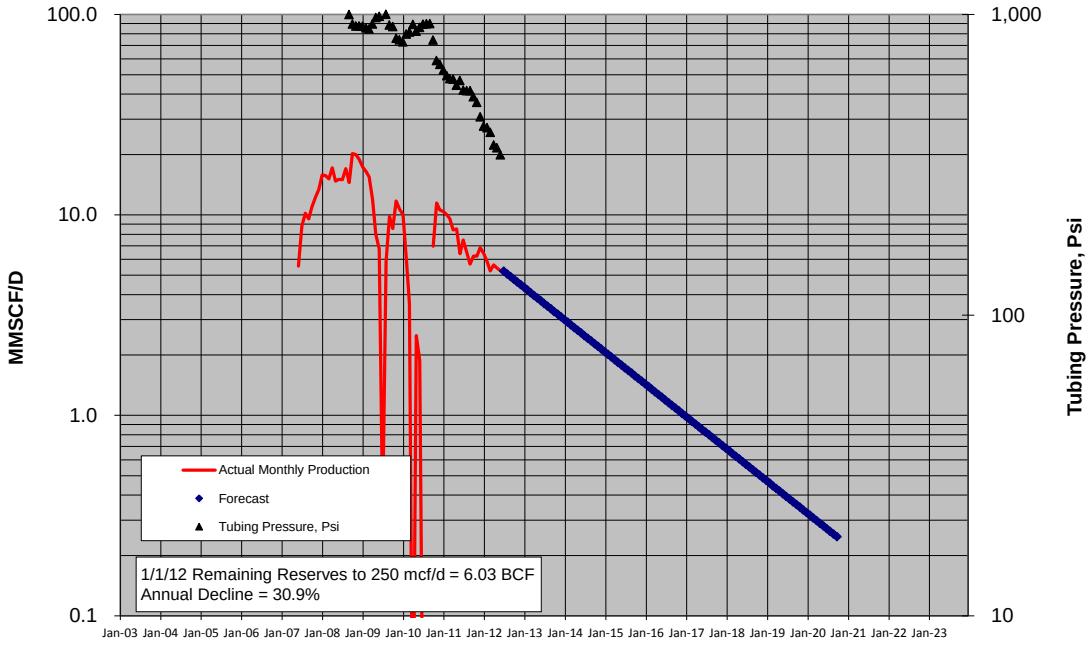
NINILCHIK UNIT S DIONNE #3



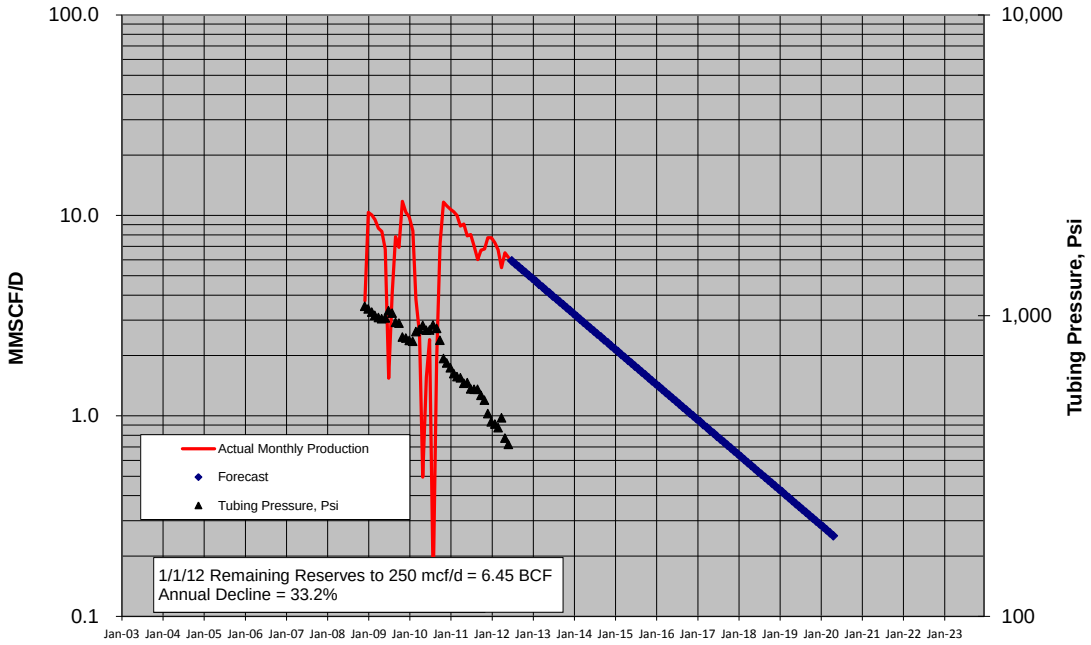
NINILCHIK UNIT S DIONNE #4



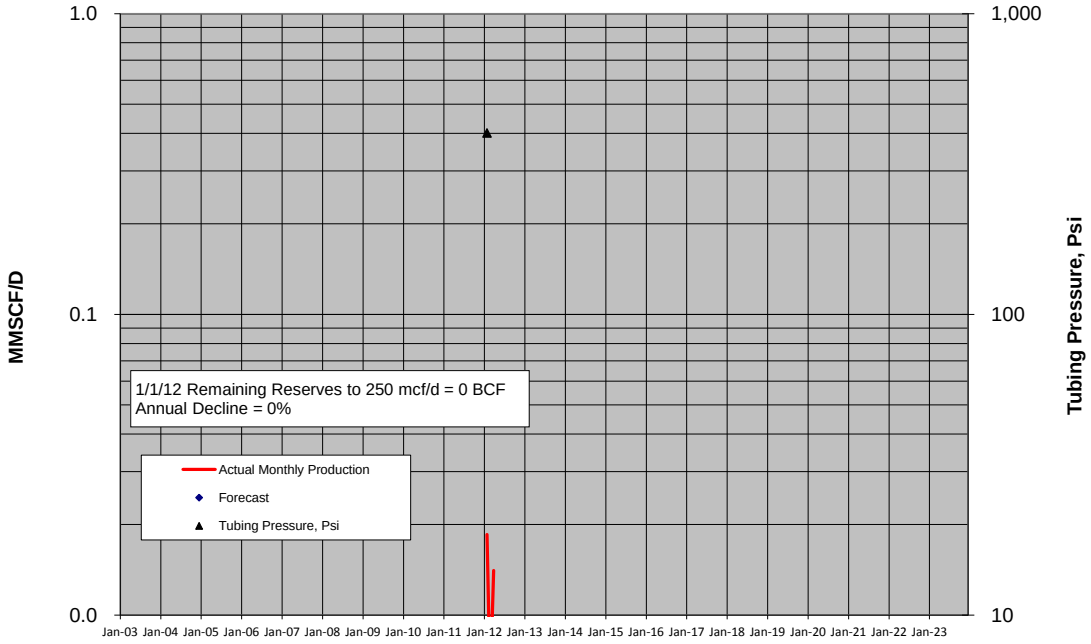
NINILCHIK UNIT S DIONNE #5



NINILCHIK UNIT S DIONNE #6

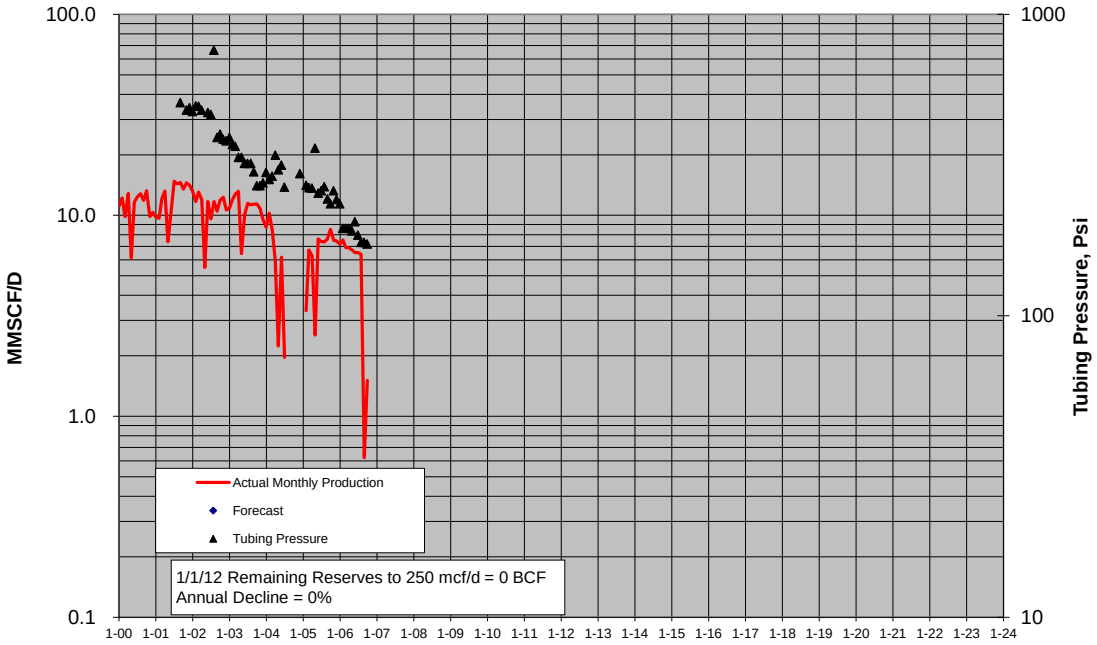


NINILCHIK UNIT S DIONNE #7

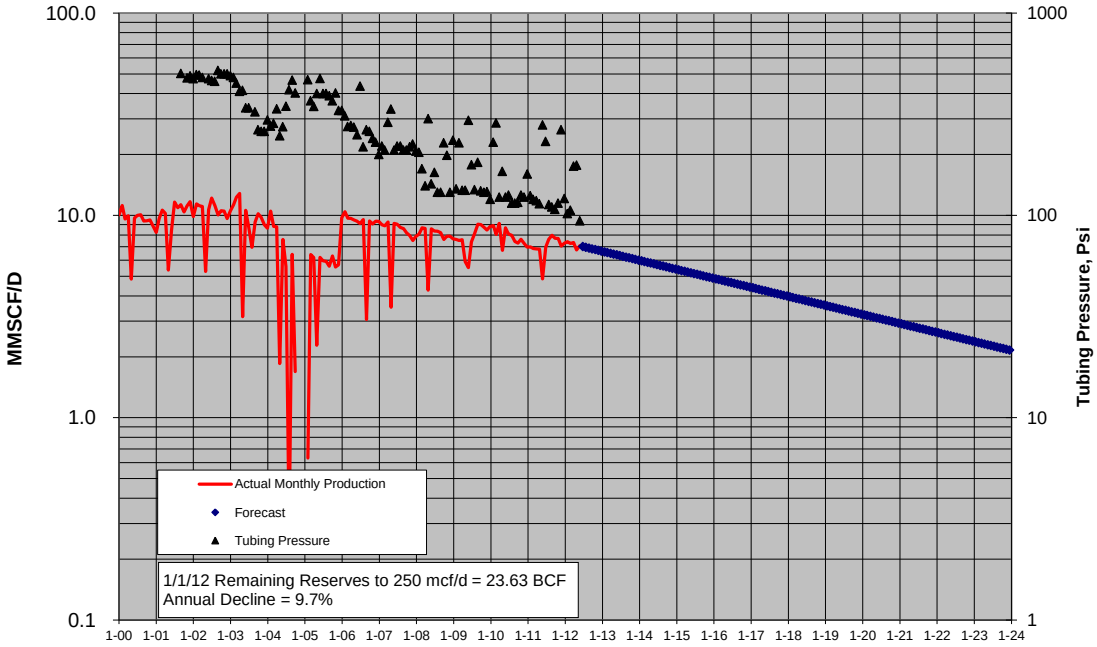


Appendix B-4: North Cook Inlet Unit Well Decline Curves

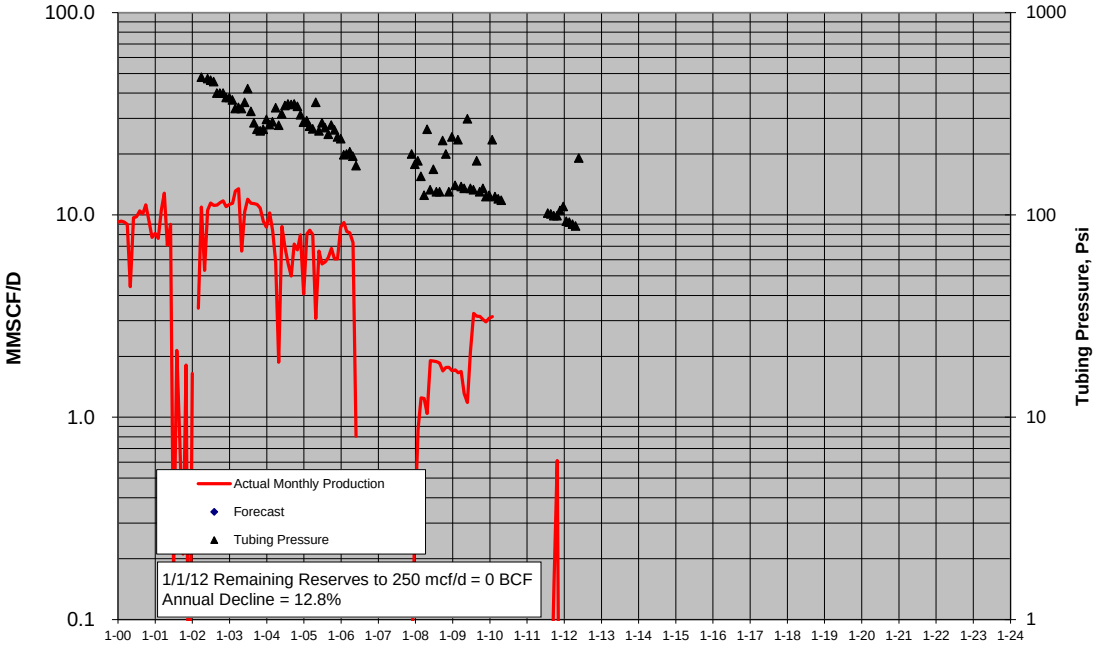
North Cook Inlet #A-01



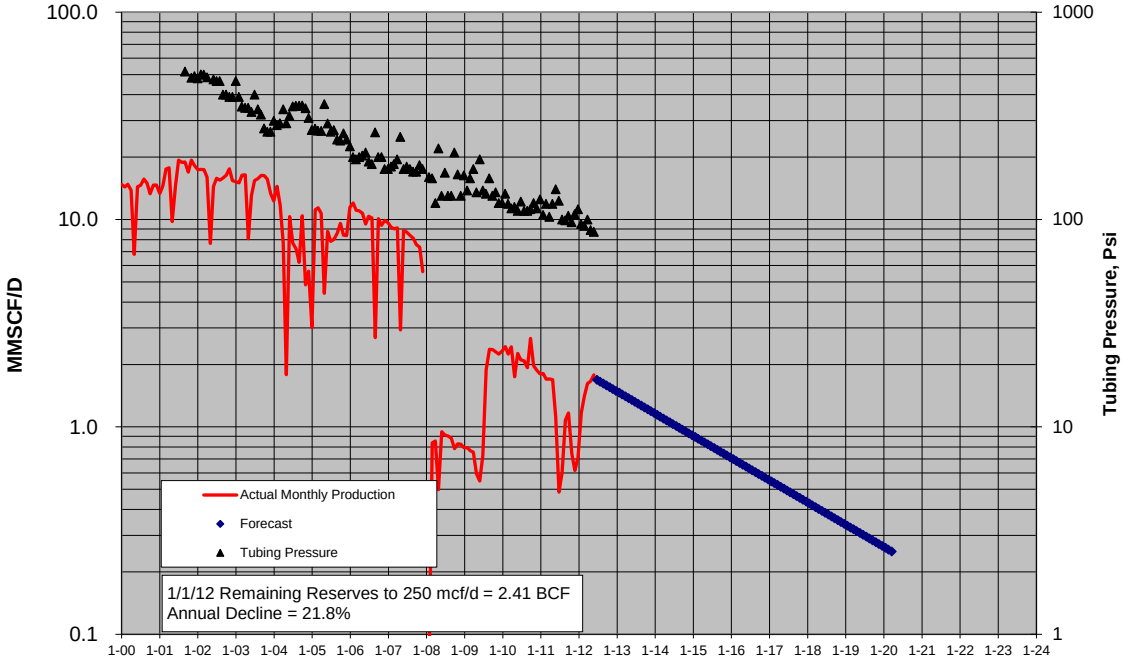
North Cook Inlet #A-02



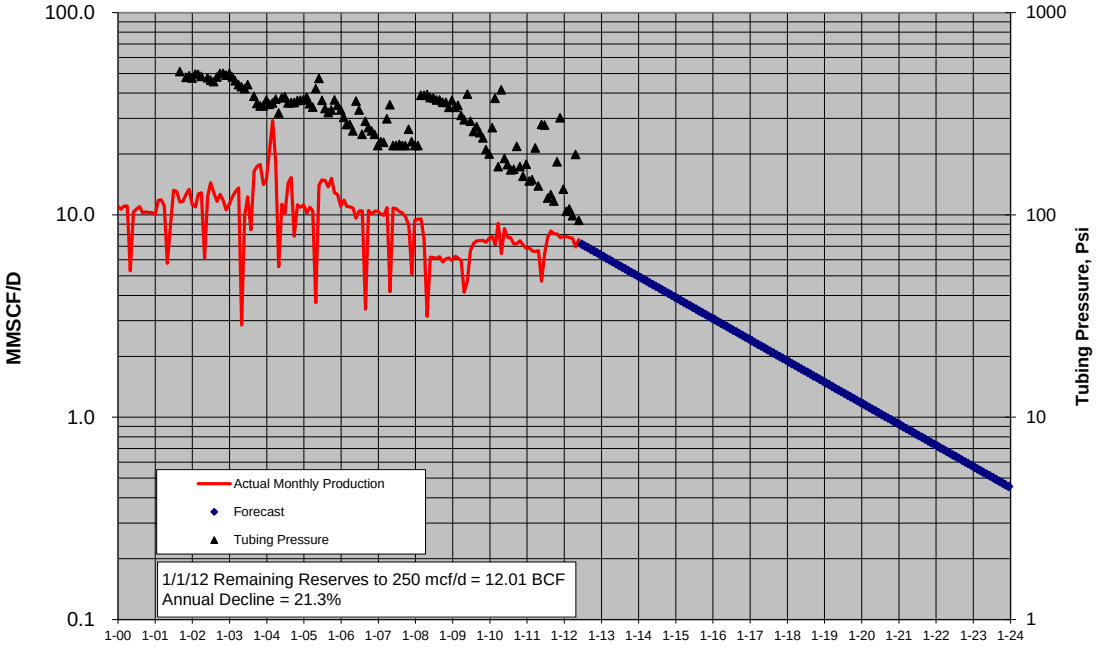
North Cook Inlet #A-03



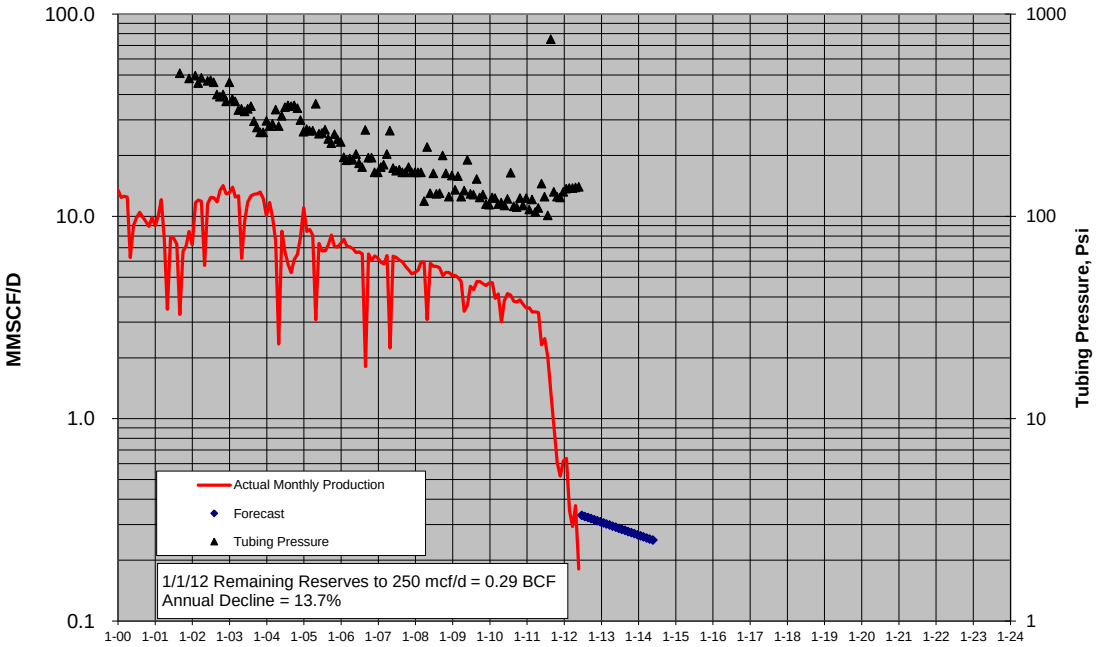
North Cook Inlet #A-04



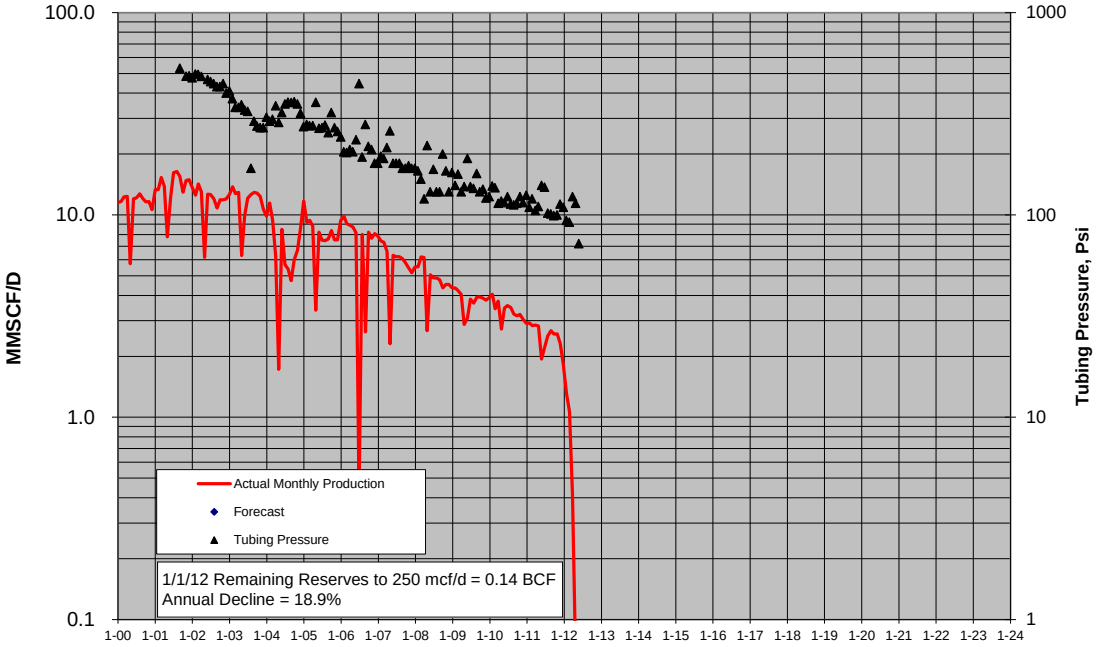
North Cook Inlet #A-05



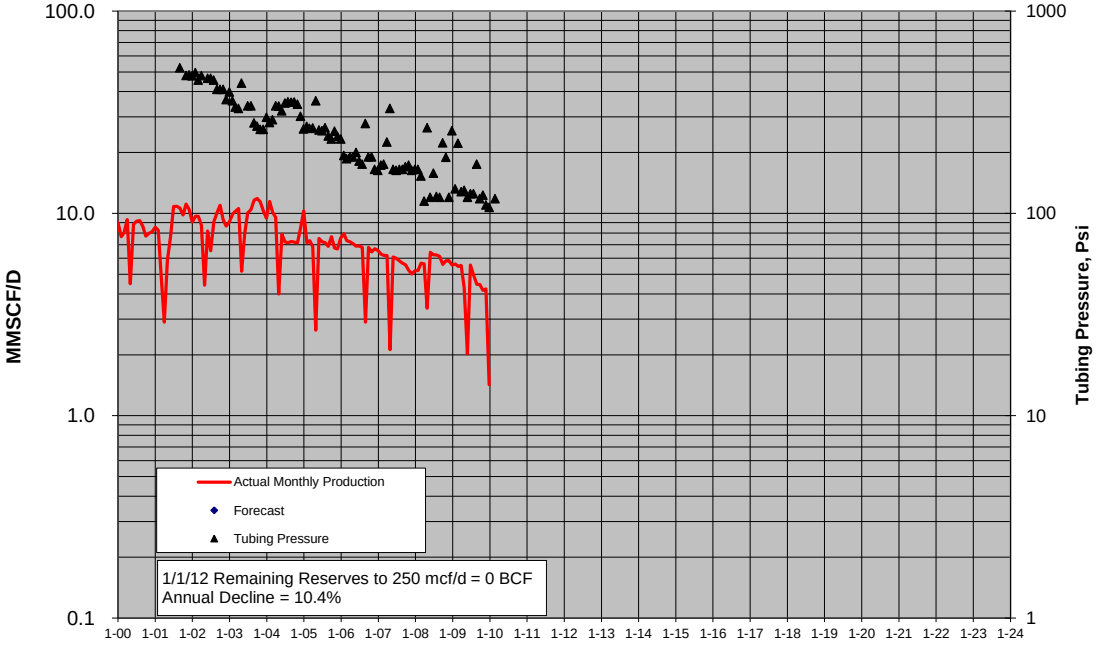
North Cook Inlet #A-06



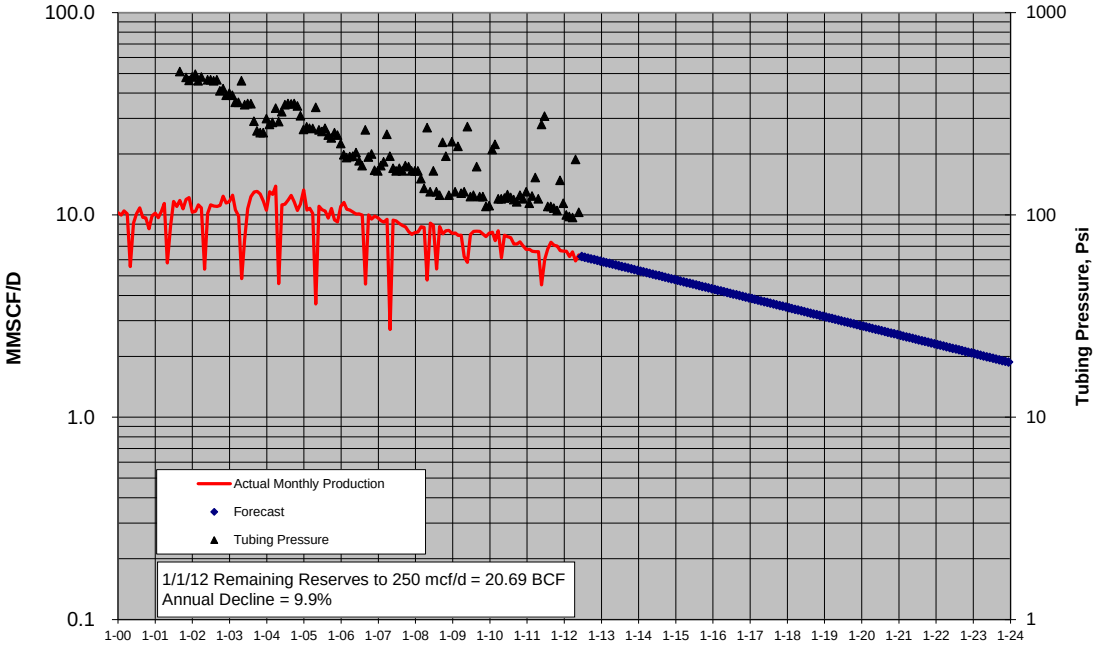
North Cook Inlet #A-07



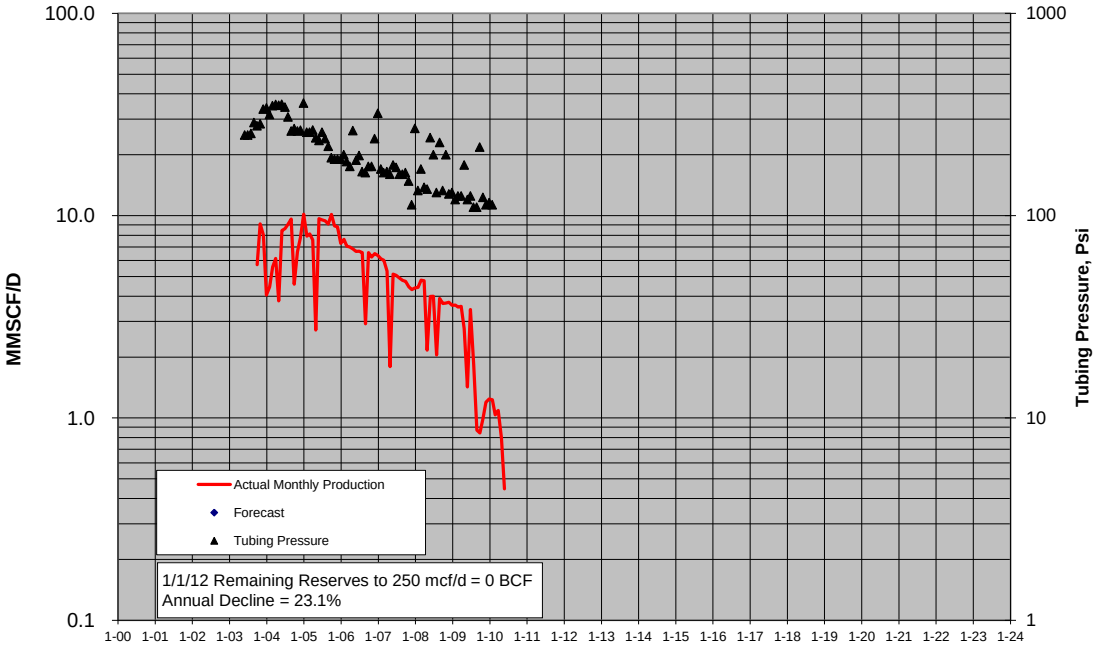
North Cook Inlet #A-08



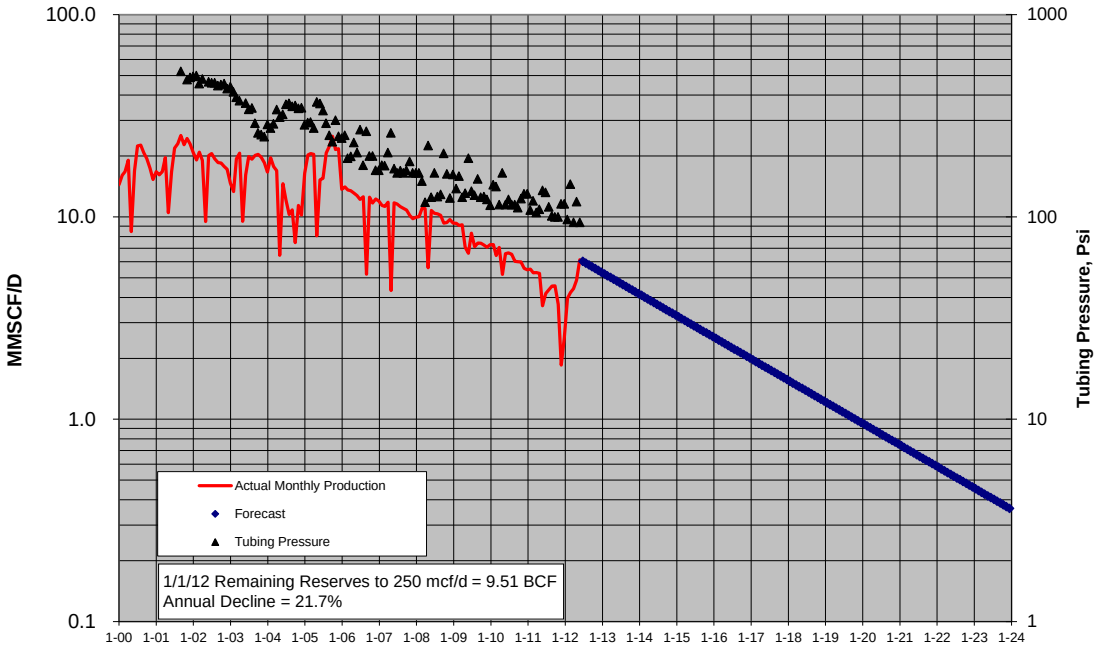
North Cook Inlet #A-09



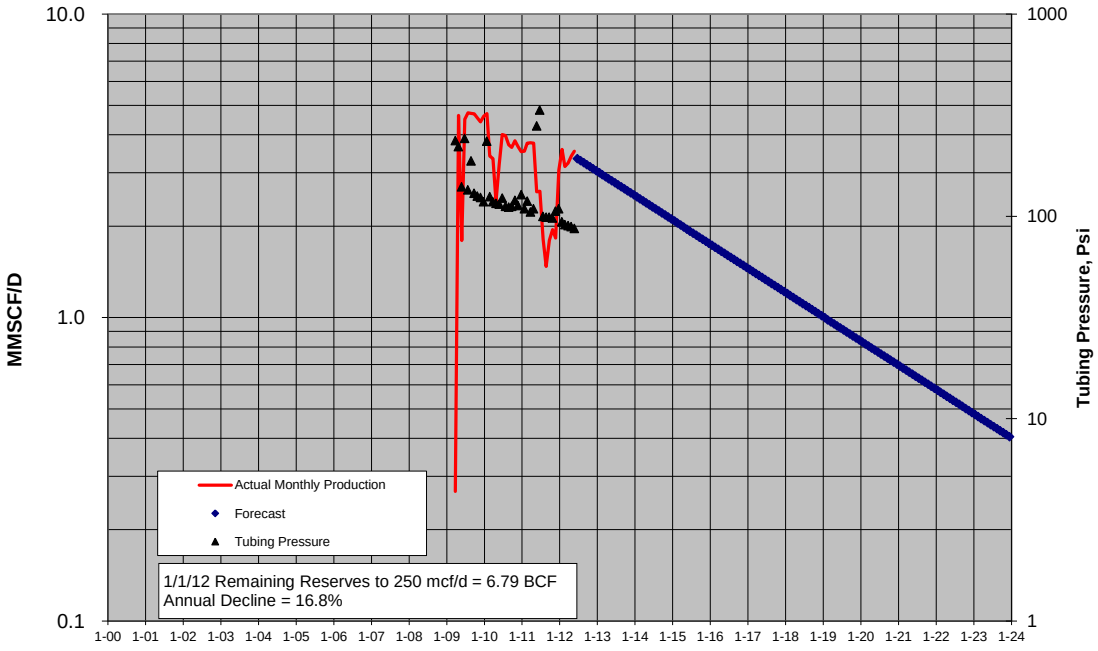
North Cook Inlet #A-10



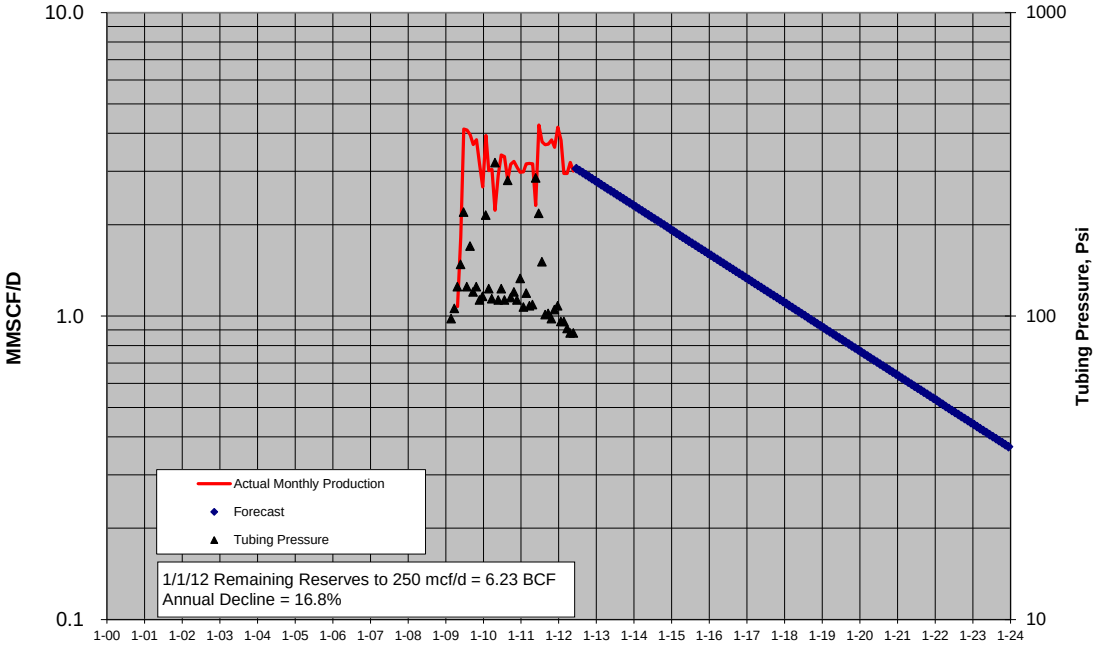
North Cook Inlet #A-12



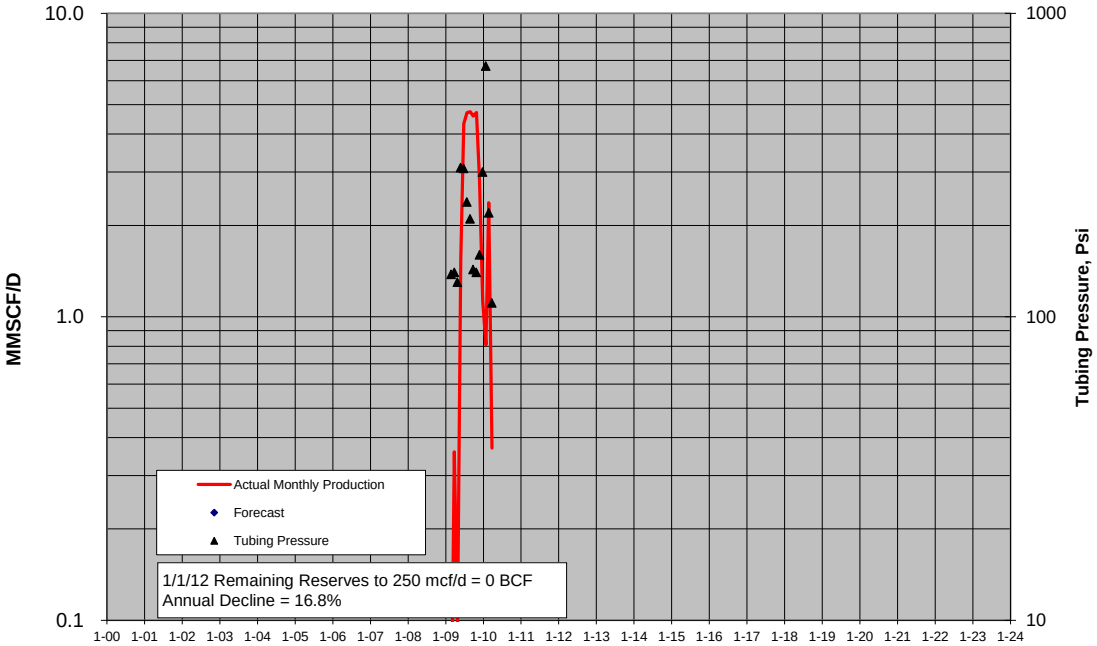
North Cook Inlet #A-14



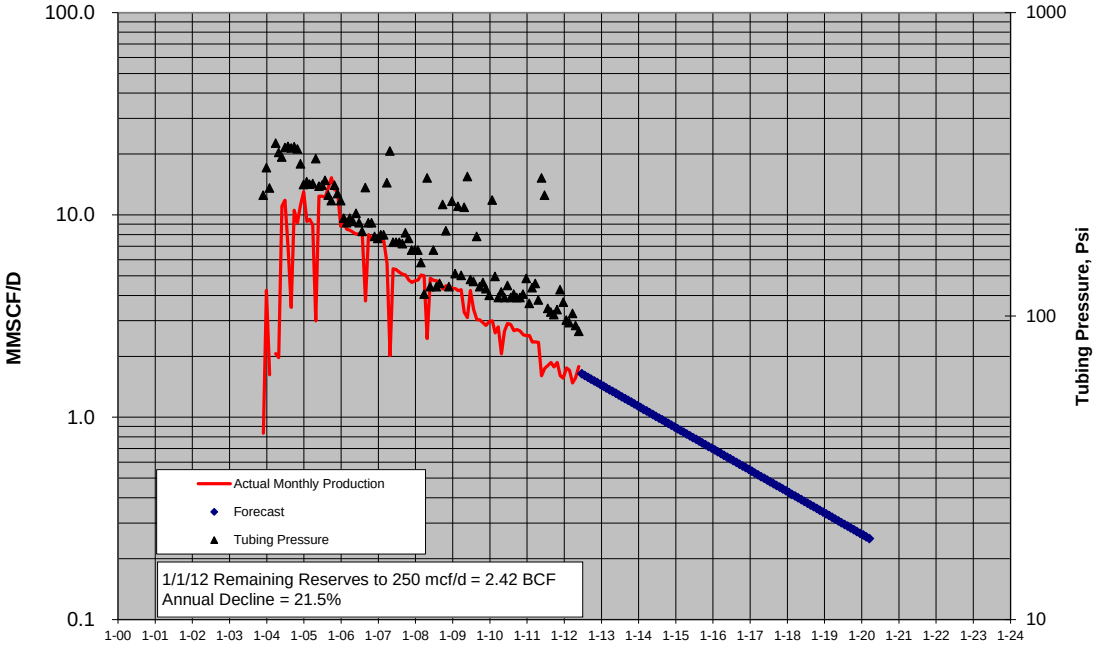
North Cook Inlet #A-15



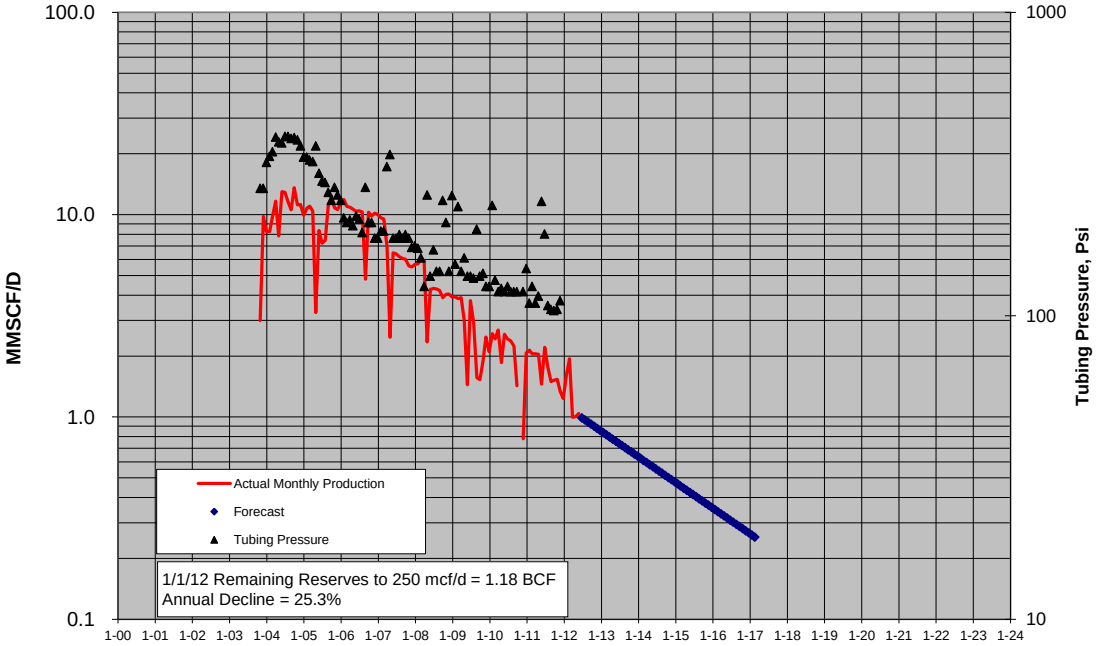
North Cook Inlet #A-16



North Cook Inlet #B-01A

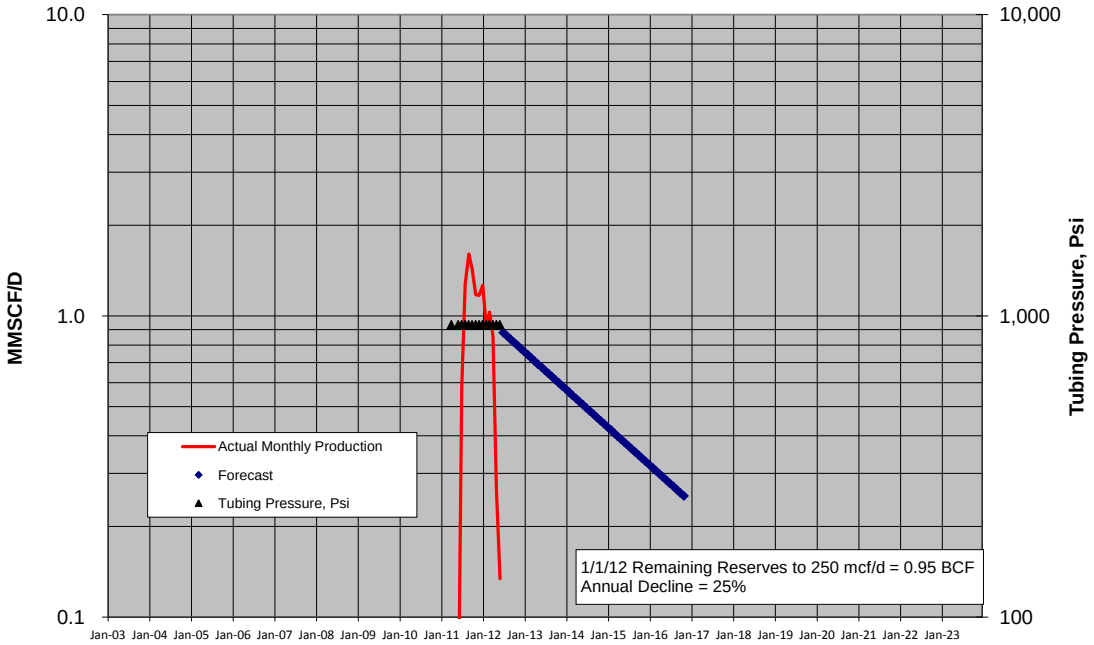


North Cook Inlet #B-03

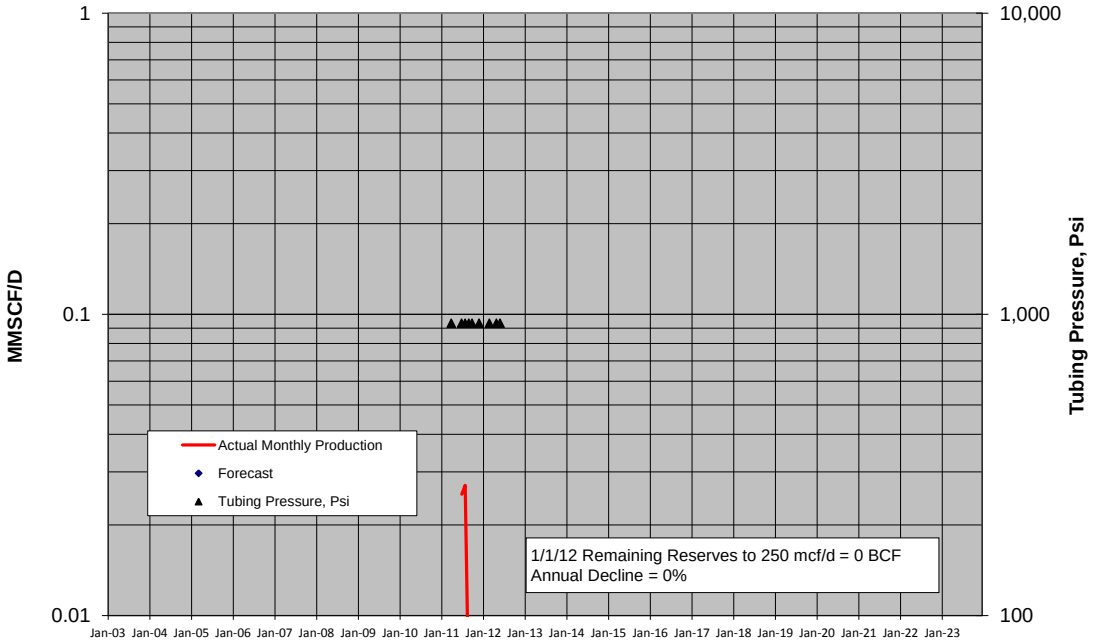


Appendix B-5: North Fork Unit Well Decline Curves

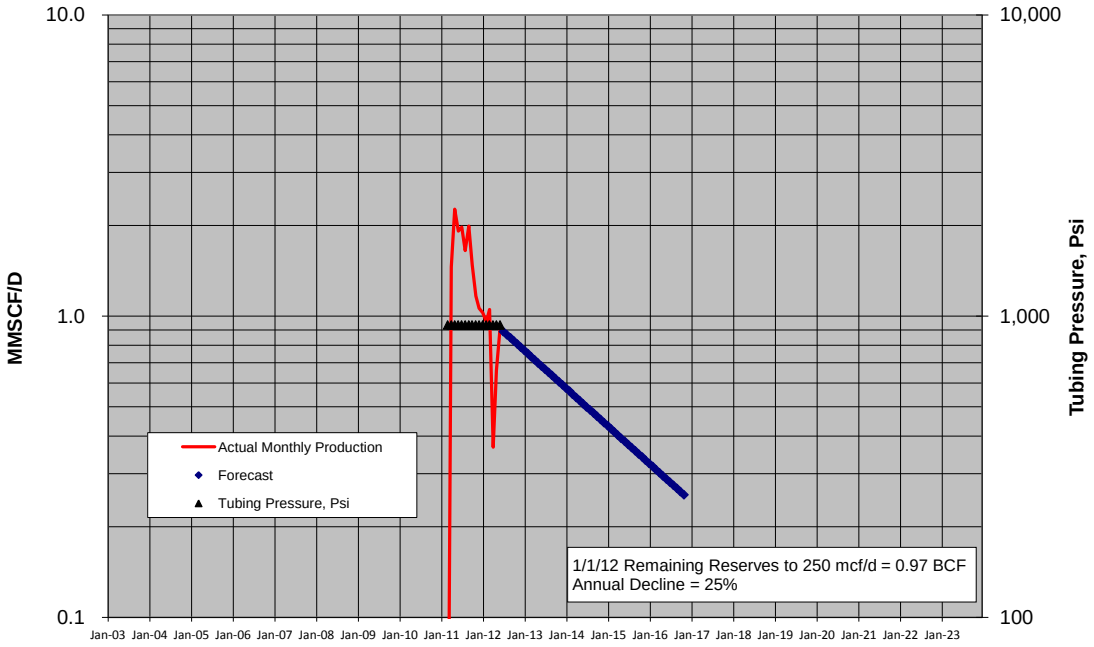
NORTH FORK 34-26



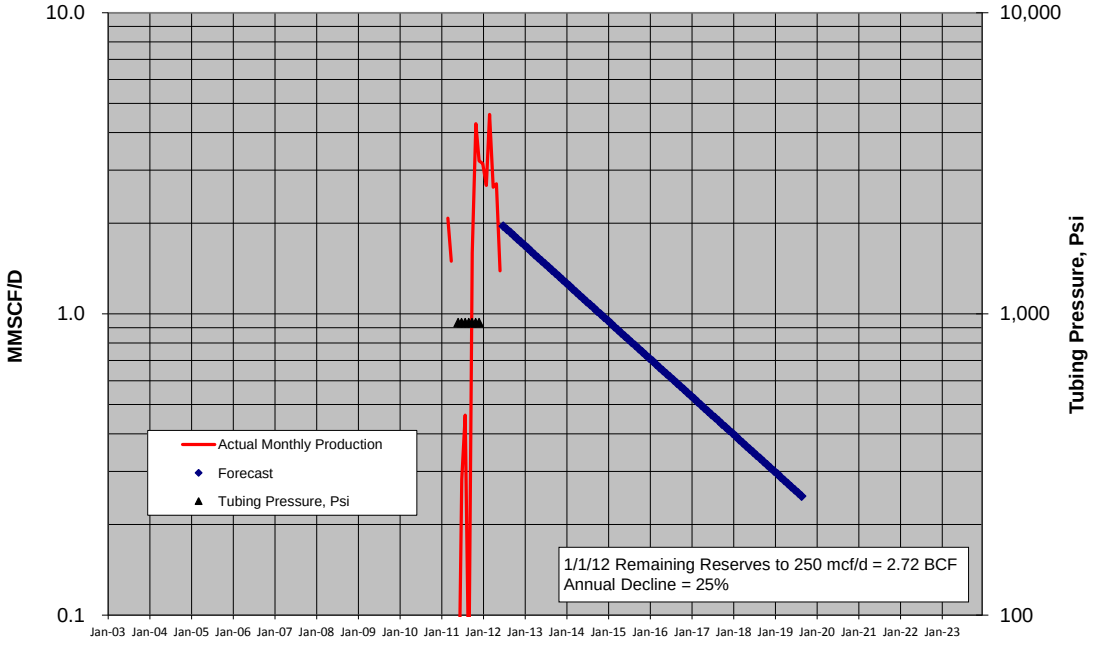
NORTH FORK UNIT 14-25



NORTH FORK UNIT 32-35

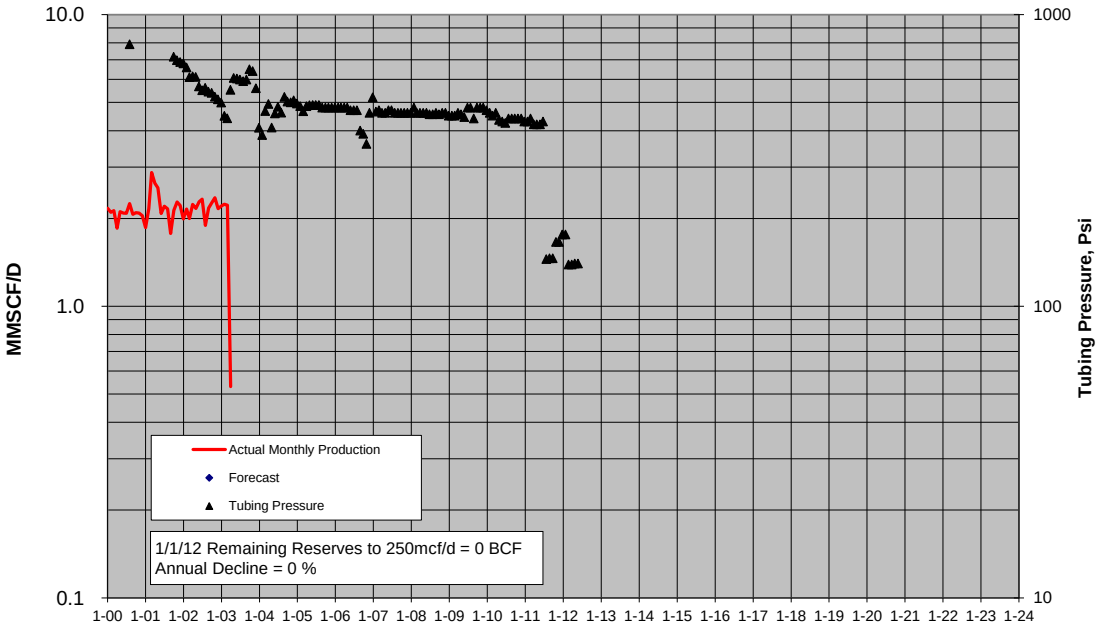


NORTH FORK UNIT 41-35

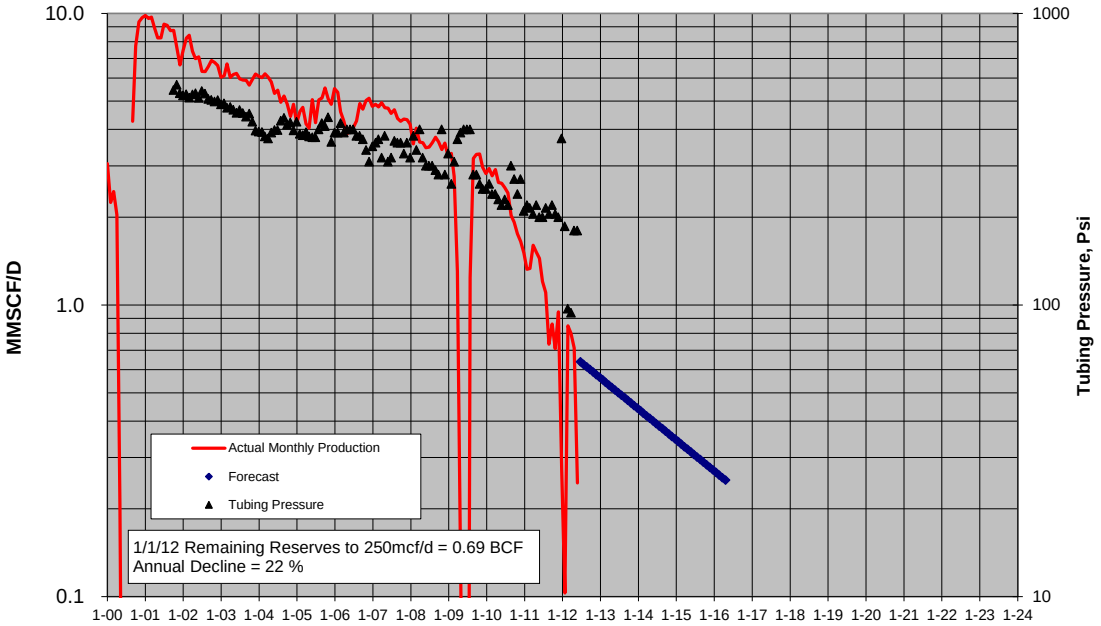


Appendix B-6: Trading Bay Unit Gas Well Decline Curves

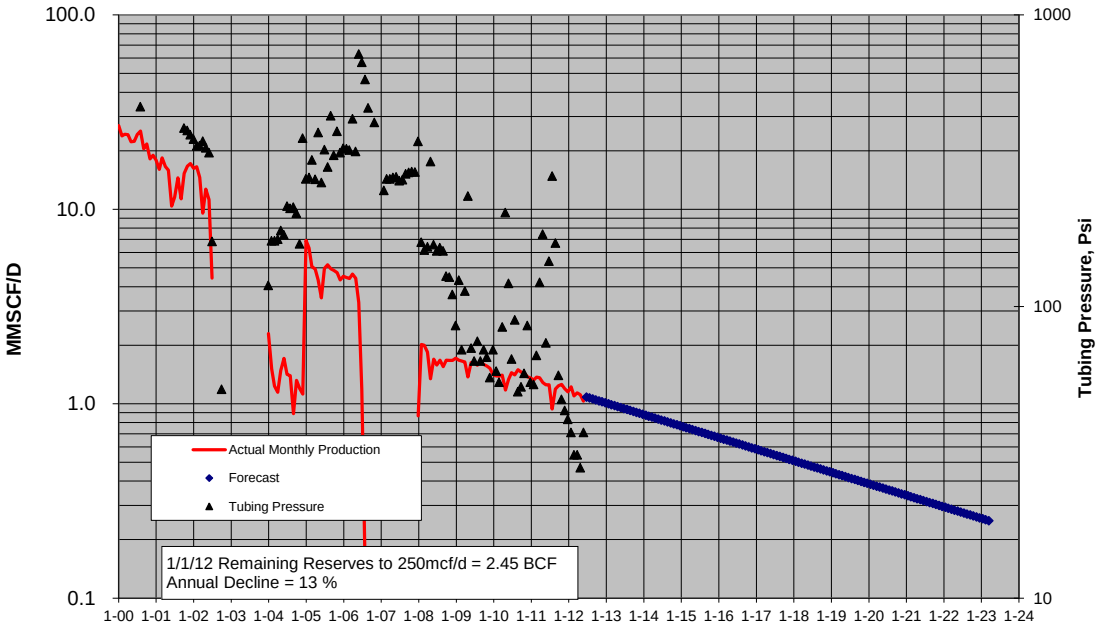
TBU Gas Well D-18



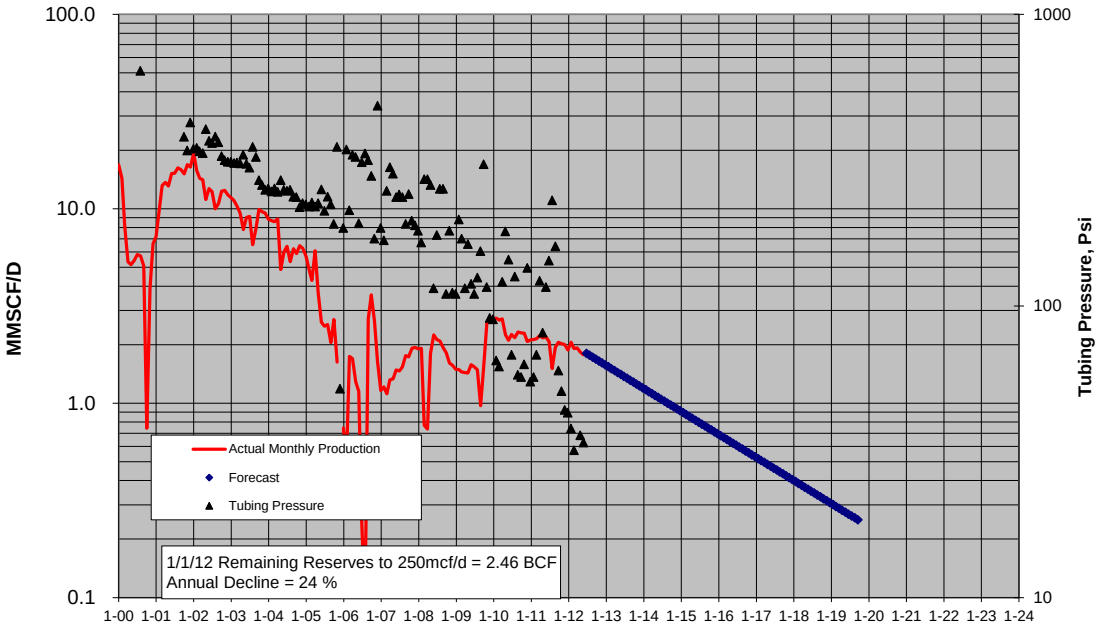
TBU Gas Well G-18DPN



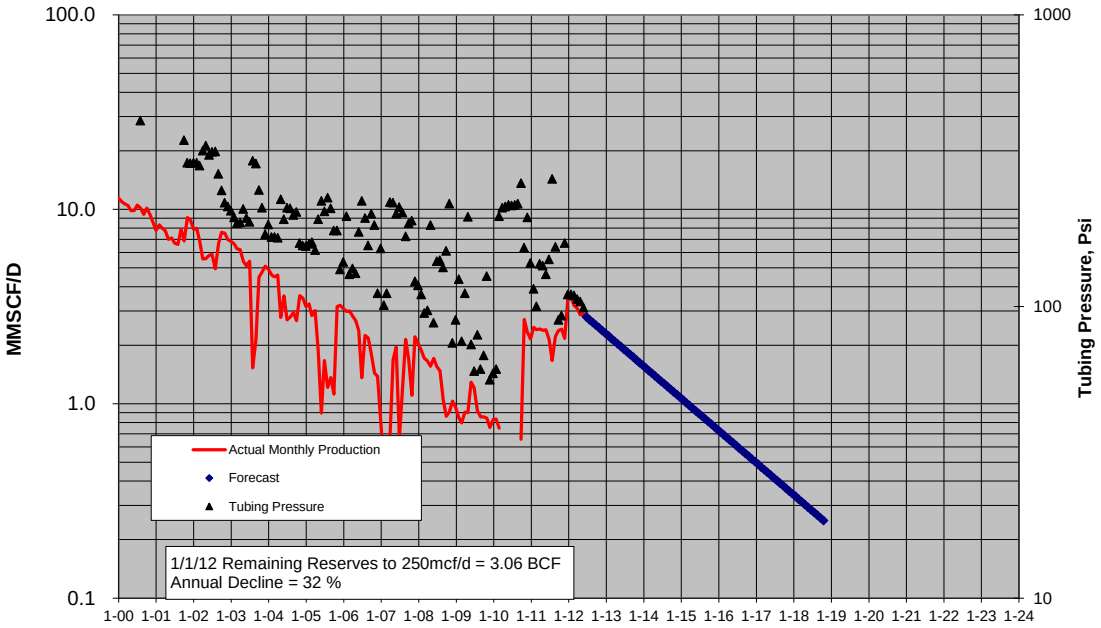
TBU Gas Well M-01



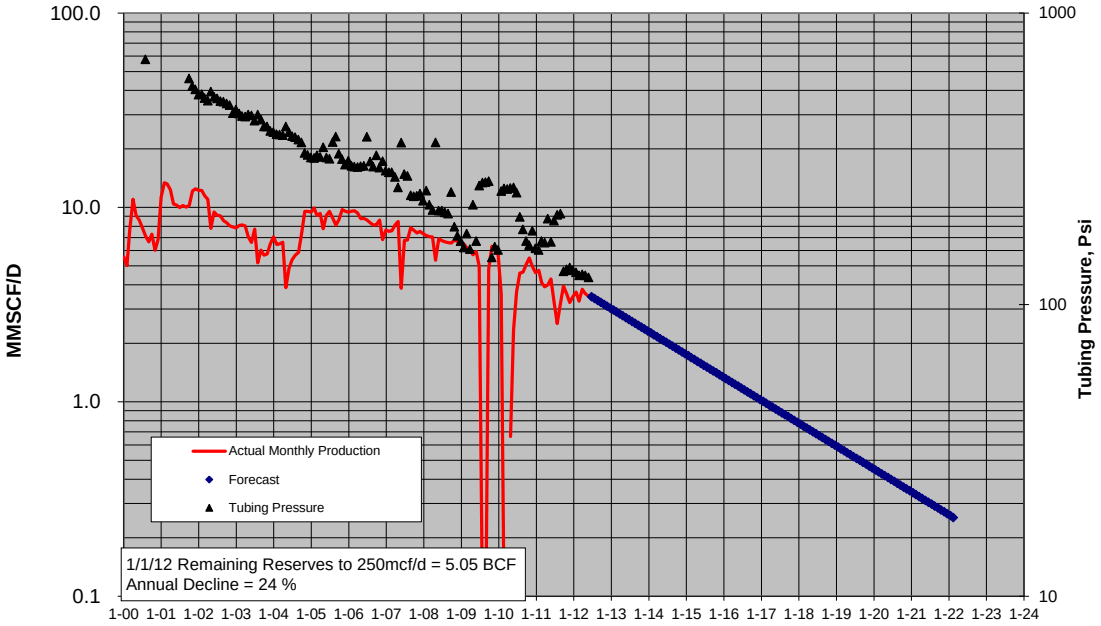
TBU Gas Well M-02



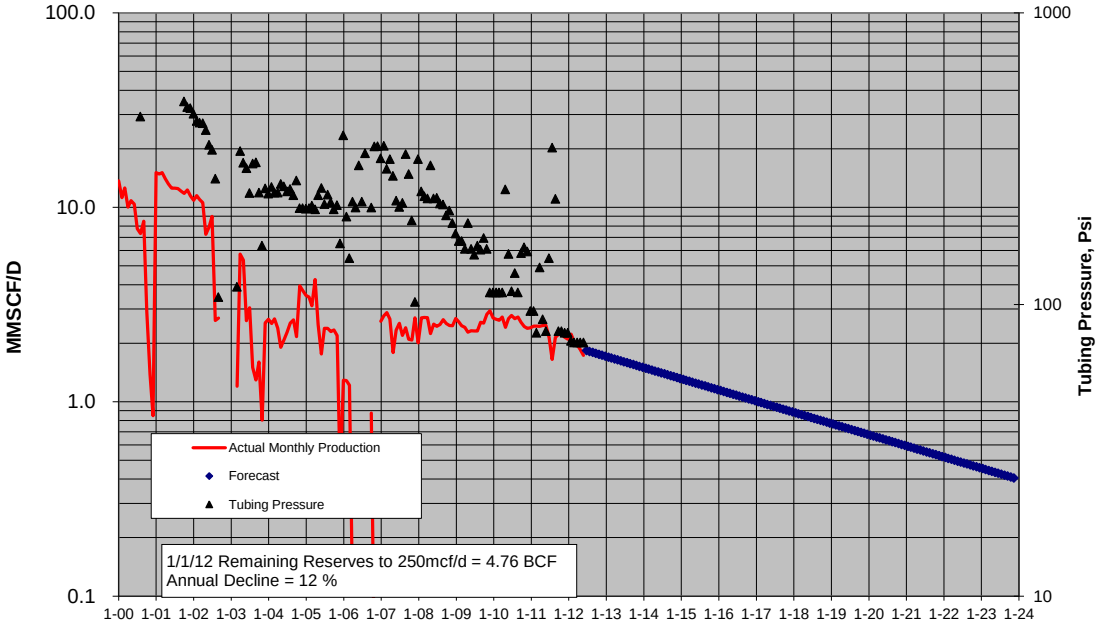
TBU Gas Well M-03



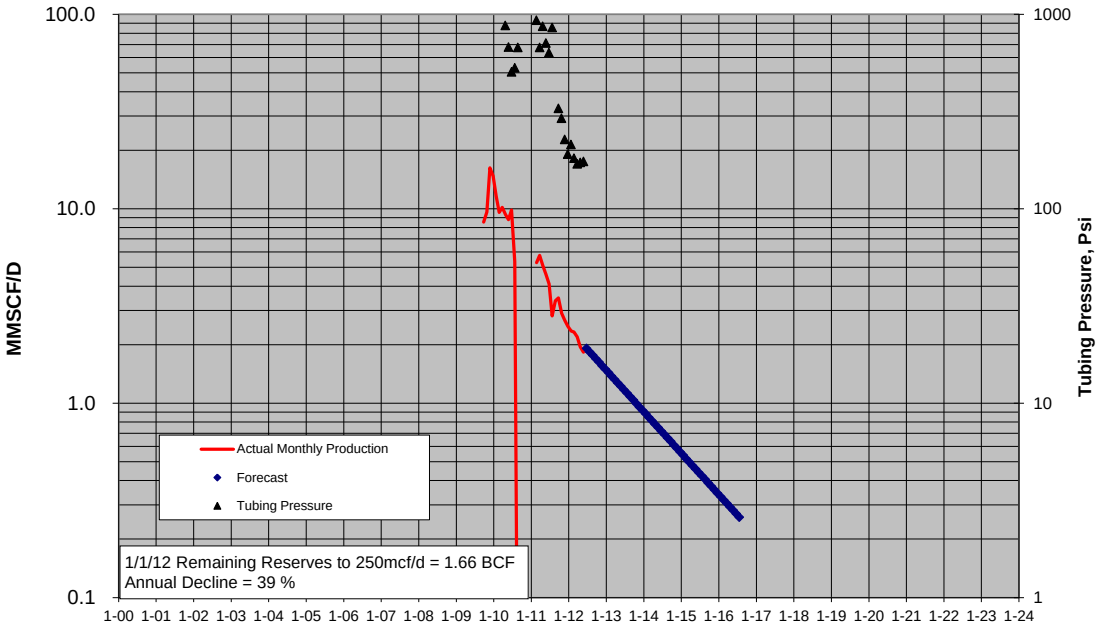
TBU Gas Well M-04



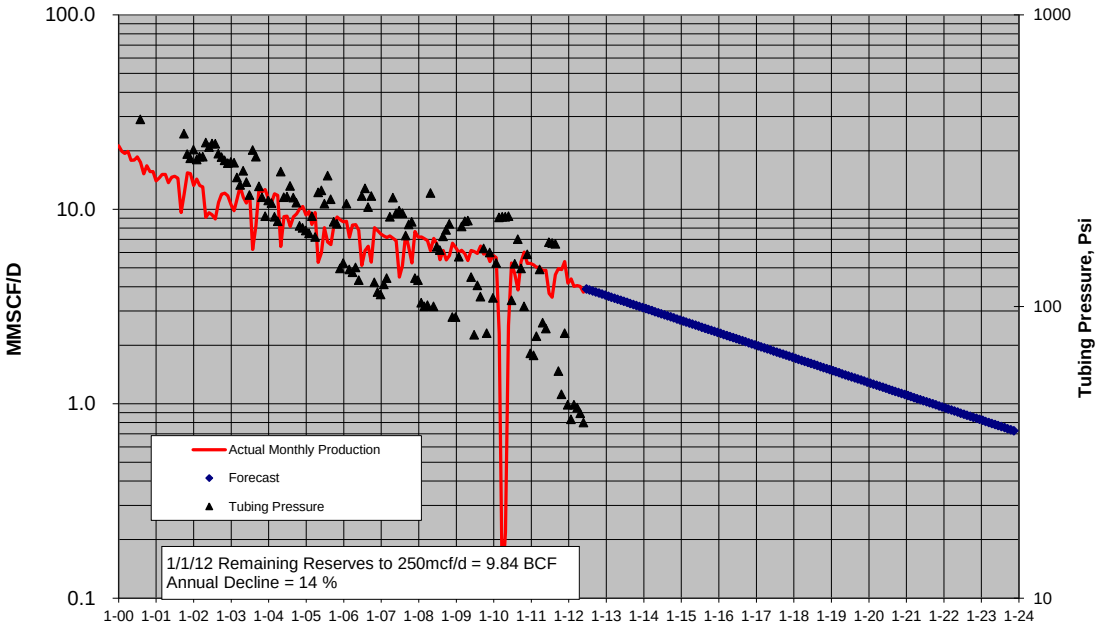
TBU Gas Well M-05



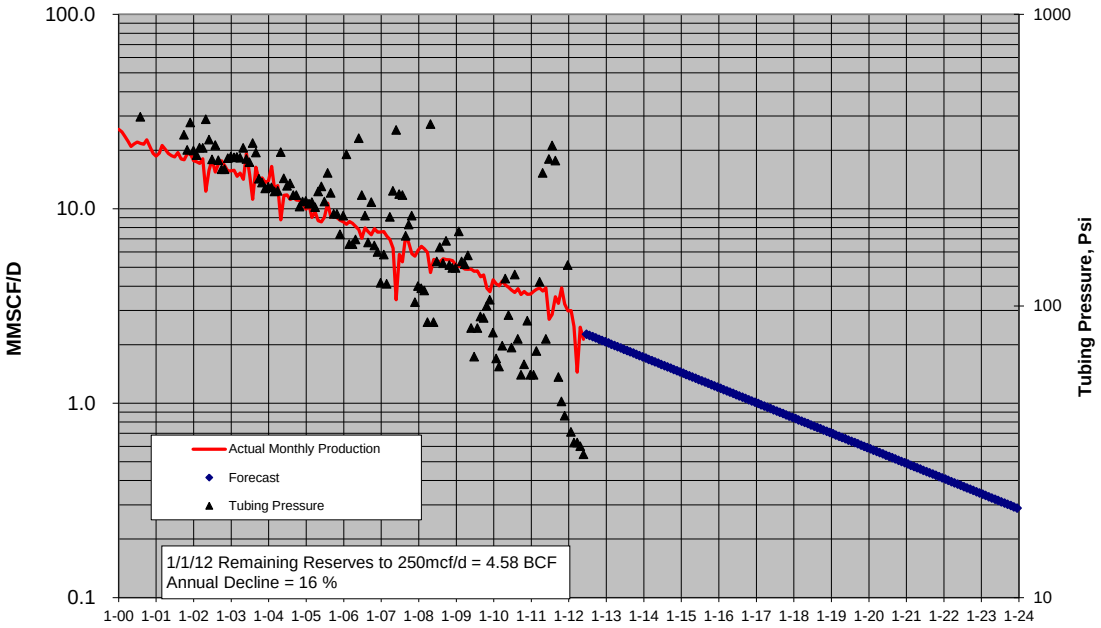
TBU Gas Well M-06



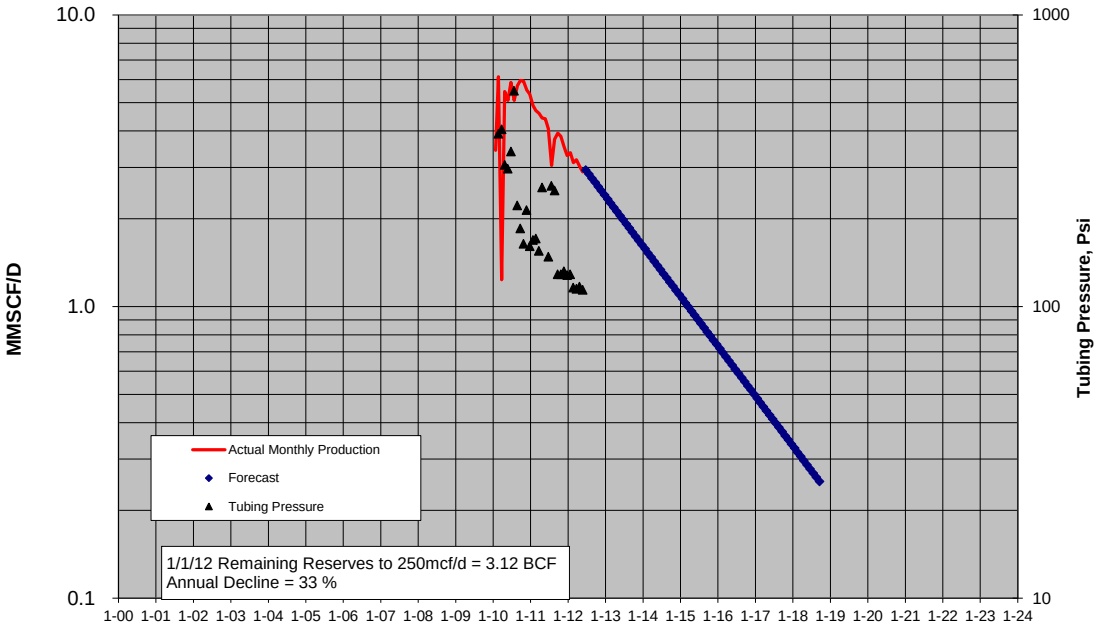
TBU Gas Well M-07



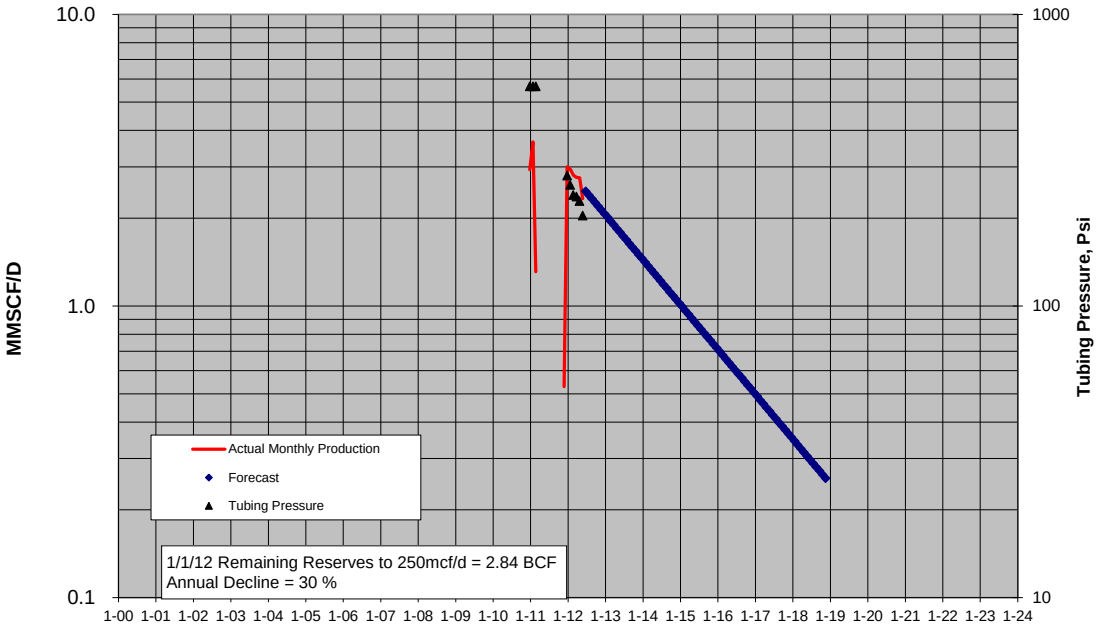
TBU Gas Well M-09



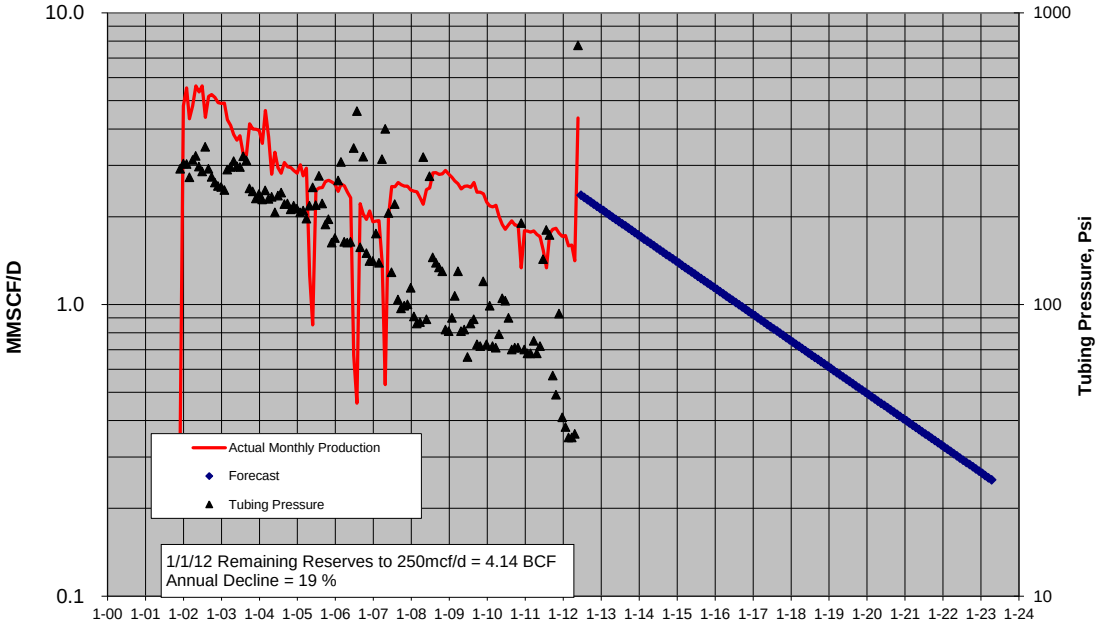
TBU Gas Well M-10



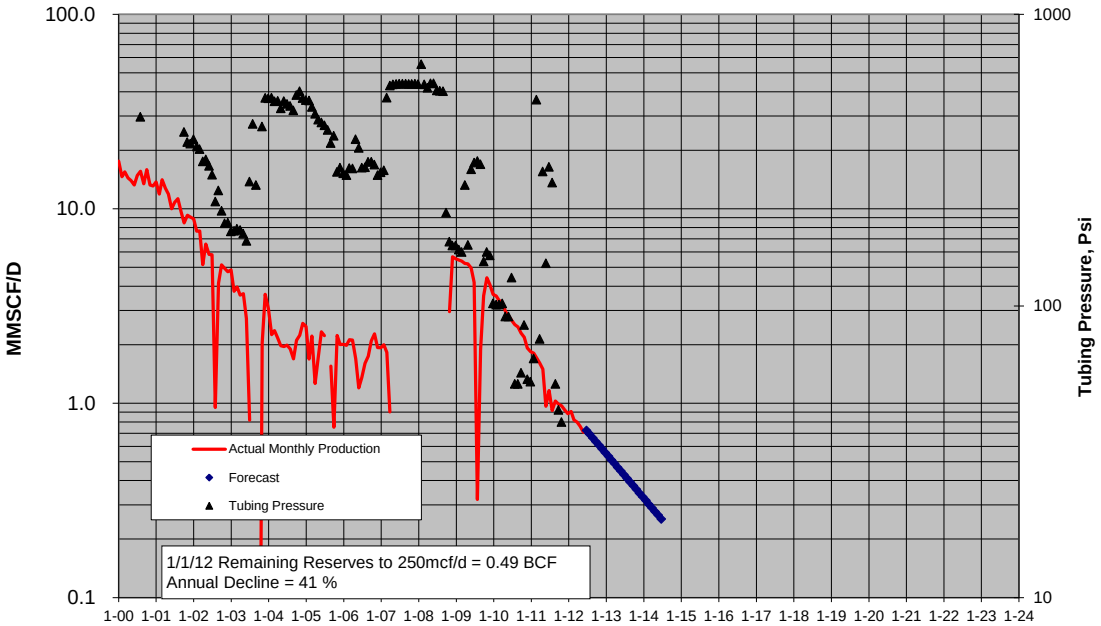
TBU Gas Well M-11



TBU Gas Well M-12



TBU Gas Well M-13



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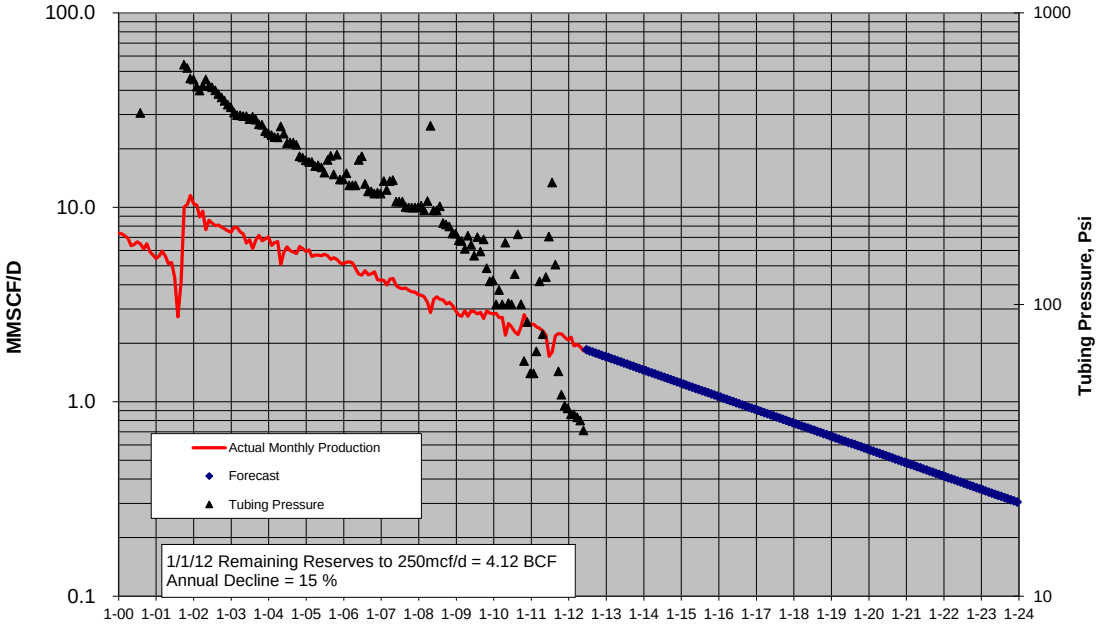

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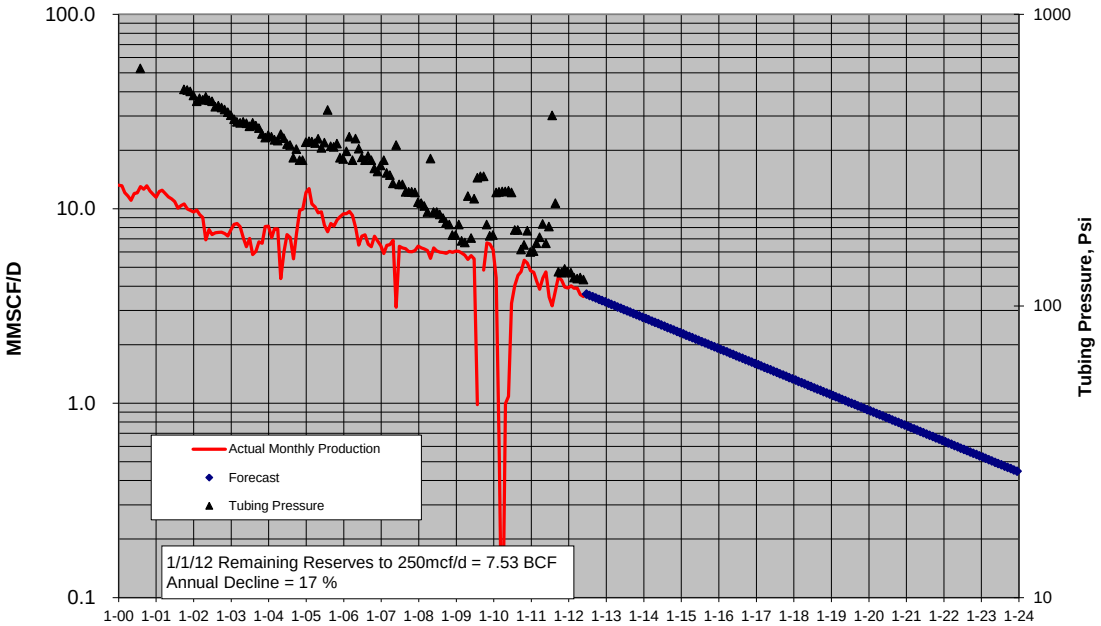

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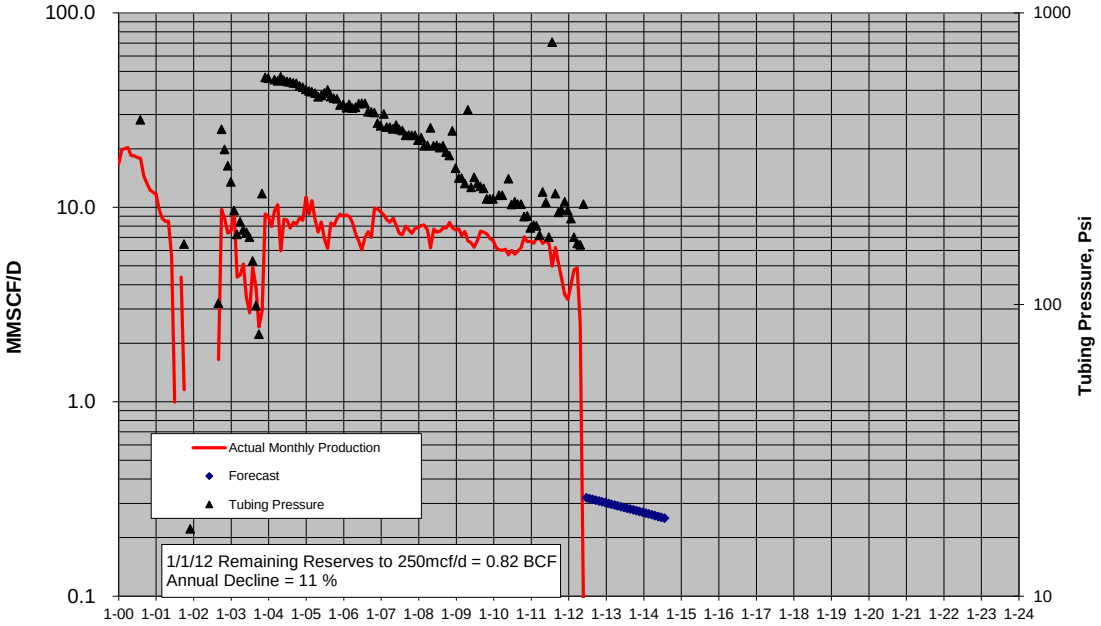

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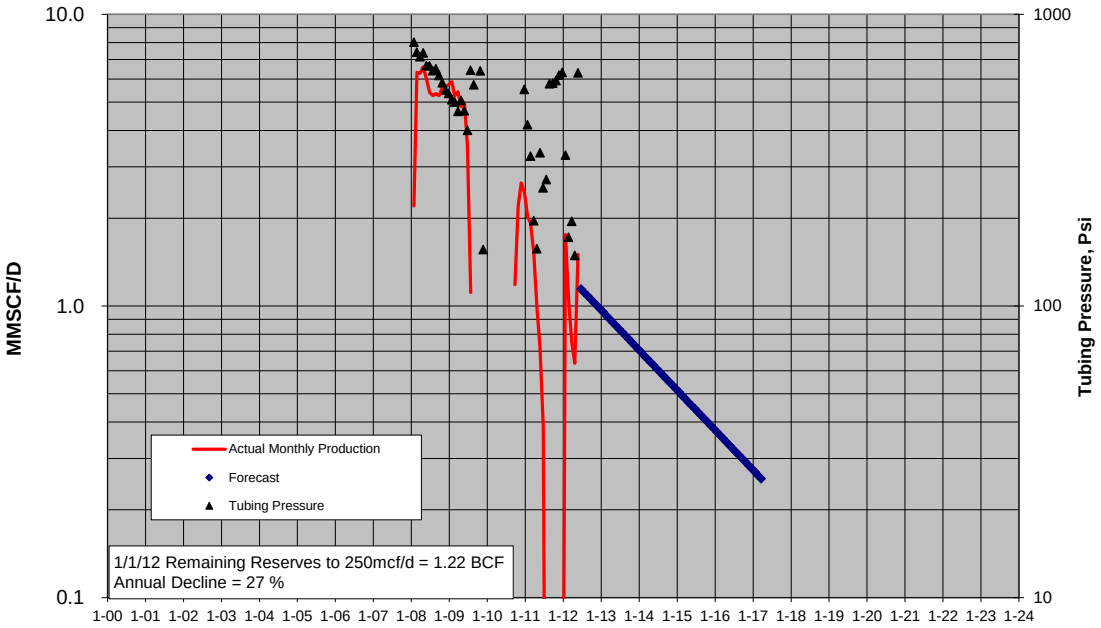

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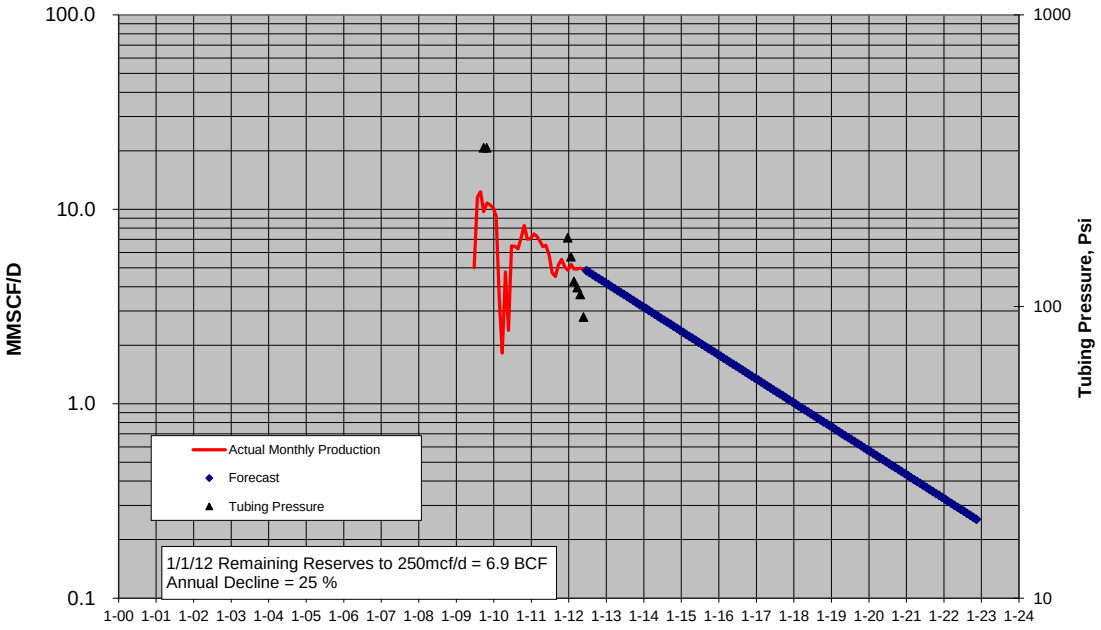

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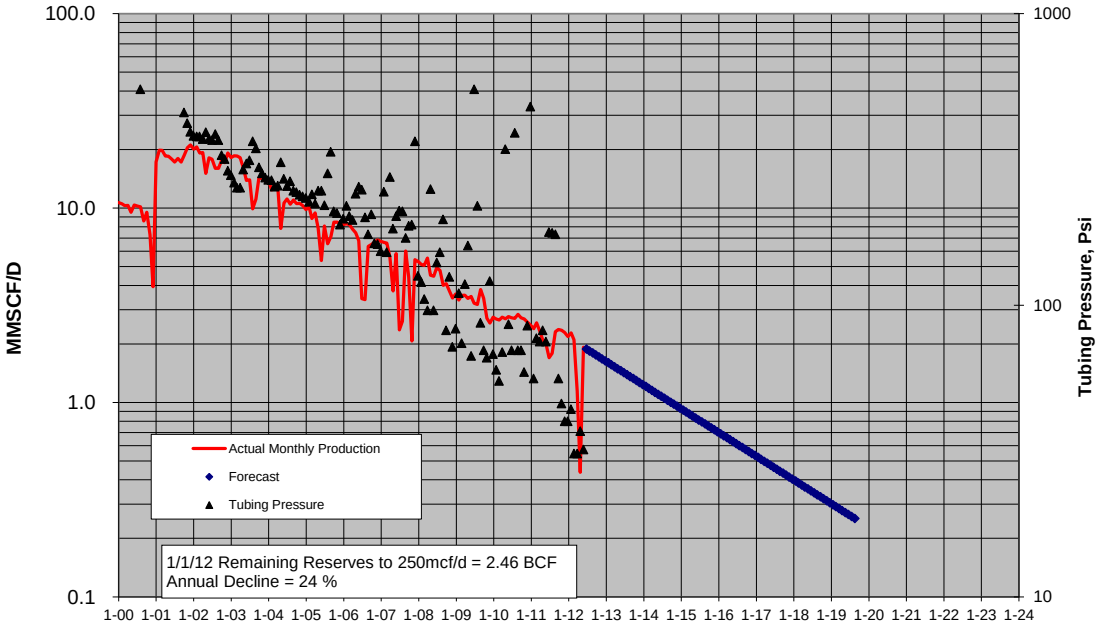

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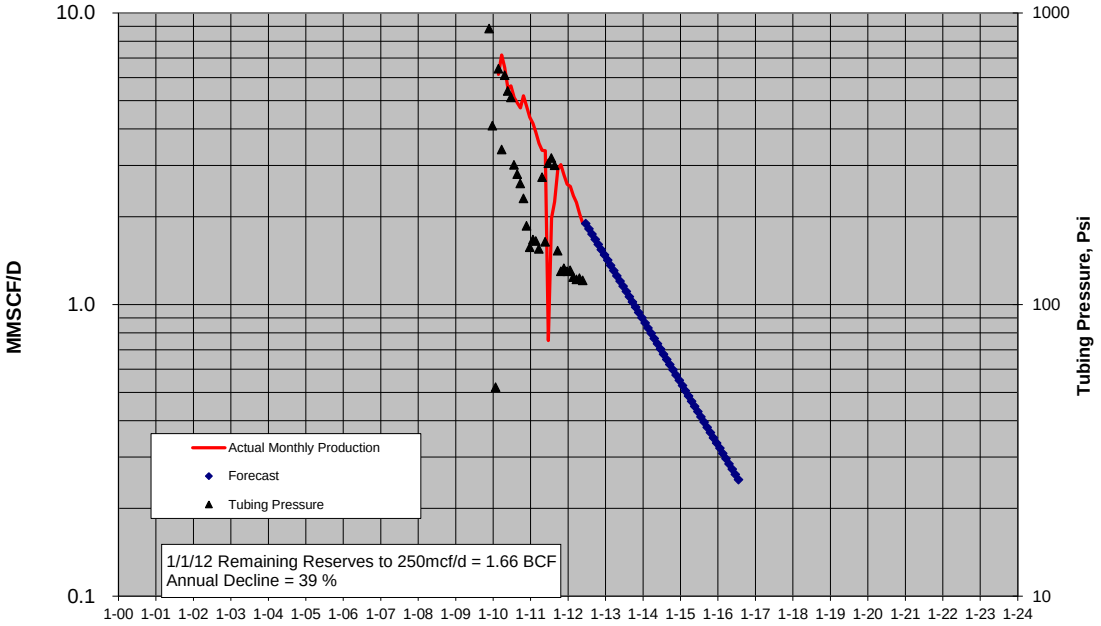

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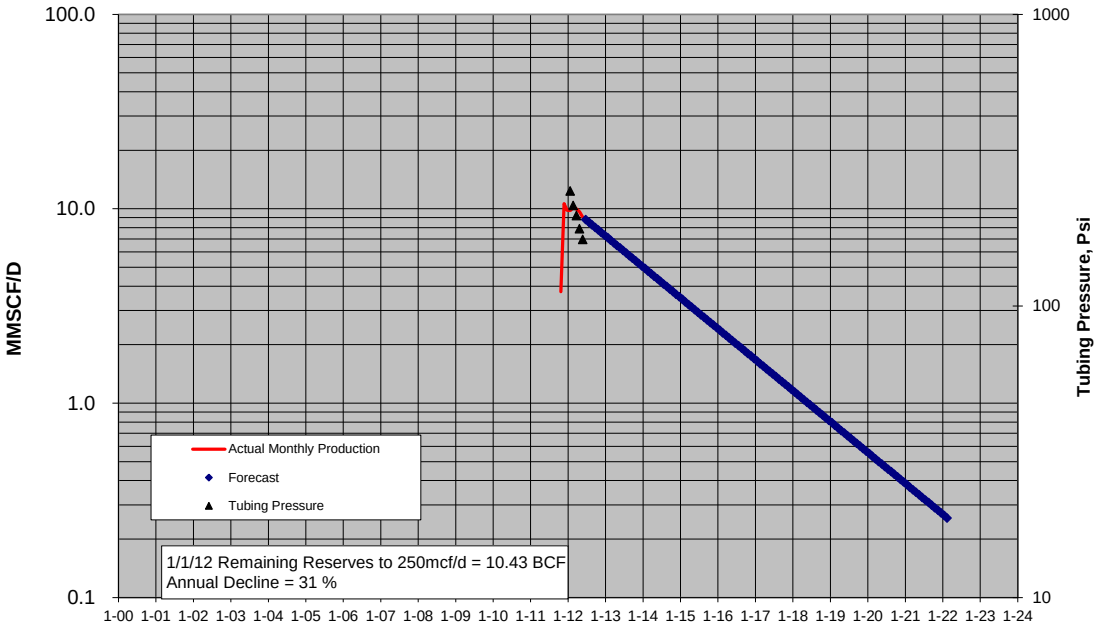
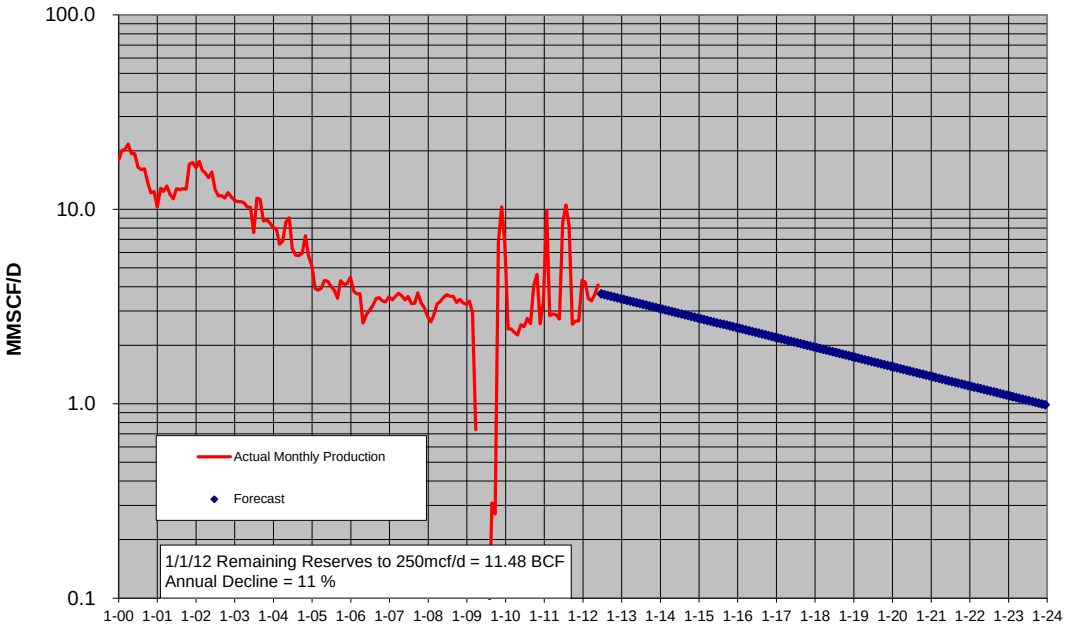


TBU Oil Wells



Appendix C: CI Gas Wells Completed in November 2009 to June 2012

November 2009 through October 2010

Well Name	Operator	Well Class	Initial Rate, 6 Month Avg. MMSCF	Status
Nicolai Creek 11	Aurora	Expl – Gas	1.3	Producing
TBU M-20	Chevron	Dev – Gas	6.1	Producing
TBU M-10	Chevron	Dev – Gas	5.3	Producing
NU Paxton 3	Marathon	Dev – Gas	3.1	Producing
BRU 212-24T	ConocoPhillips	Dev – Gas	2.7	Producing

There were five wells completed as Cook Inlet gas wells between November 2009 and October 2010 that averaged 3.7 MMSCF/D for their first six months of production. This is in line or slightly higher than the 3.1 MMSCF/D twelve month average for wells completed in the 2007-2009 period.

November 2010 through October 2011

Well Name	Operator	Well Class	Initial Rate, 6 Month Avg. MMSCF	Status
NU Paxton 4	Marathon	Dev – Gas	2.4	Producing
North Fork 32-35	Armstrong	Expl – Gas	2.0	Producing
North Fork 14-25	Armstrong	Expl – Gas	0.2	Producing
North Fork 34-26	Armstrong	Expl – Gas	1.3	Producing
North Fork 41-35	Armstrong	Expl – Gas	2.1	Producing
Nicolai Creek 10	Aurora	Dev – Gas	2.4	Producing
TBU M-11	Chevron	Dev – Gas	1.8	Producing

There were seven wells completed as Cook Inlet gas wells between November 2010 and October 2011 that averaged 1.75 MMSCF/D for their first six months of production. This is about 57% of the 3.1 MMSCF/D twelve month average for wells completed in the 2007-2009 period.

November 2011 through June 2012

Well Name	Operator	Well Class	Initial Rate, 6 Month Avg. MMSCF	Status
Kenai Loop 1	Buccaneer	Exp - Gas	4.2	Producing
TBU M-21	Hilcorp	Dev - Gas	10.0	Producing
NU S Dionne 7	Marathon	Dev - Gas	0	Shut In
BRU 224-23T	ConocoPhillips	Dev - Gas	7.2	Producing

There were four wells completed as Cook Inlet gas wells between November 2011 and June 2012 that averaged 5.4 MMSCF/D for their first six months of production. This is about 173% of the 3.1 MMSCF/D twelve month average for wells completed in the 2007-2009 period.