

To: Senate Finance Committee

Attn: Senator Bert Stedman

Co-Chair, Senate Finance Committee

From: David Wood

Date: 25 February, 2010

**Re: Answer to Question & Request Raised by Senator Thomas during My
Testimony Given Today (25 February 2010)**

The very pertinent and perceptive question asked earlier today by Senator Thomas sought information with respect to how might the gas dilution / cross subsidy effect identified in Alaska's current production tax rules have impacted the production taxes actually paid in recent periods had a gas line had been in operation at the time?

In order to provide an indicative answer to this question I have taken the data for price, volume and costs (excluding Cook Inlet Gas) for fiscal year 2008 (i.e. July 2007 to June 2008), which is available from the Alaska Department of Revenue (DOR), Fall 2008 Revenues Sources Book (RSB), (Dec 2008). That period is selected because of the wide range of oil prices that prevailed and the fact that the ACES rules were in place. The three tables attached to this document provide the necessary data and calculations to establish the impact.

Table 1 calculates the production tax for oil based on actual data showing the components of that calculation. As no gas is exported the calculations are based upon oil barrels only. This results in total production tax of **\$ 7.482 billion** which is reduced by investment credits of \$411.5 million to \$ 7.071 billion. The calculation shown essentially reproduces the figures from the RSB.

Table 2 assumes a 4.5 bcf/day gas line and calculates production tax for this hypothetical gas stream on a stand-alone basis (i.e. not combined with oil). The calculation uses the U.S. wellhead natural gas prices from the EIA's records for the months in question. There would be some small differentials between these prices and AECO prices in Alberta, but I believe they are close enough for the purpose. I have also assumed gas transportation costs of \$4.5/mcf (\$27/boe) and field costs (capital costs plus operating costs) of \$400 million (\$1.46/ boe) which are those used by Commissioner Galvin in the examples he provided from the DOR in his

testimony of 24 February 2010. This data computes a total production tax of **\$ 1.140 billion** to which no investment credits are applied.

By adding the computed production taxes in tables 1 and 2 the stand-alone oil and gas production tax for this FY 2008 (assuming 4.5 bcf /day) would be **\$8.622 billion** (reduced to \$8.211 billion by the deduction of \$411.5 million investment credits).

Table 3 calculates the production tax by combining the revenue cost and volume streams from table 2 to provide a combined oil and gas production tax calculation of **\$6.795 billion** (reduced to \$6.383 billion by the deduction of \$411.5 million investment credits).

For this period the loss to the State in production tax revenue caused by the cross subsidy effect of combining oil and gas in the production tax calculation would have amounted to:

$$\text{\$6.795 billion less \$8.622 billion} = \text{\$-1.827 billion.}$$

This calculation is in line with the figures of potential loss in fiscal revenue discussed during the testimonies.

Sincerely,

David Wood

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Table 1. Oil Stand-alone Production Tax Calculation (July 2007 to June 2008)

FY 2008 Production Tax Revenues: Actual Versus Potential Under Alternative Mechanisms													
(Analysis Based on Actual US West Coast Prices and Cost Data)													
	US West Coast Oil Price	Per Barrel Total Costs	Per Barrel Production Tax Value	PTV less Progressivity Threshold	PTV less Progressivity Threshold	PTV Rate per Dollar of Adjusted PTV	Incremental Progressivity Rate	Volume (Millions barrels)	Combined Progressivity Tax (CPT)	Base Production Tax (BPT) Rate	Base Production Tax (BPT) Value	CPT + BPT Value	CPT + BPT less Investment Credits
Month	\$/barrel	\$/barrel	PTV \$/barrel	\$/barrel	\$/barrel	%	%	millions barrels	\$ millions	%	\$ millions	\$ millions	\$ millions
A	B	C	D= (B + C)	E	F= (D + E) >= 0	G	H= (F * G)	I	J= (D * H * I)	K	L= (D * I * K)	M= (J + L)	N= (M - P)
Monthly Analysis, \$30 PTV \$/boe threshold and 0.004% progressivity parameter under Current Law as enacted in 2007													
Jul	75.93	-22.88	53.05	-30	23.05	0.40%	9.22%	19.5	95.2	25.00%	258.3	353.5	
Aug	73.83	-22.88	50.95	-30	20.95	0.40%	8.38%	19.5	83.1	25.00%	248.0	331.2	
Sep	79.92	-22.88	57.04	-30	27.04	0.40%	10.81%	18.8	116.2	25.00%	268.7	385.0	
Oct	84.77	-22.88	61.89	-30	31.89	0.40%	12.75%	19.5	153.7	25.00%	301.3	455.0	
Nov	92.98	-22.88	70.10	-30	40.10	0.40%	16.04%	18.8	211.9	25.00%	330.2	542.1	
Dec	88.64	-22.88	65.76	-30	35.76	0.40%	14.30%	19.5	183.2	25.00%	320.1	503.3	
Jan	91.16	-22.88	68.28	-30	38.28	0.40%	15.31%	19.5	203.6	25.00%	332.4	536.0	
Feb	94.42	-22.88	71.54	-30	41.54	0.40%	16.61%	18.2	216.5	25.00%	325.8	542.3	
Mar	105.06	-22.88	82.18	-30	52.18	0.40%	20.87%	19.5	334.0	25.00%	400.1	734.1	
Apr	112.37	-22.88	89.49	-30	59.49	0.40%	23.79%	18.8	401.3	25.00%	421.6	822.9	
May	125.41	-22.88	102.53	-30	72.53	0.40%	29.01%	19.5	579.2	25.00%	499.1	1078.4	
Jun	133.78	-22.88	110.90	-30	80.90	0.40%	32.36%	18.8	676.3	25.00%	522.5	1198.7	
Totals:								229.9	3254.2	25.00%	4228.1	7482.3	7070.8
Data Source: Alaska Department of Revenue (DOR), Fall 2008 Revenues Sources Book (RSB), (Dec 2008)													P
FY2008 Taxable North Slope barrels /day: 626,456				229.3 millions barrels in FY2008			Lease Expenditures (\$/bbl): 16.78		TT&T (\$/bbl): 6.10	Capex Credits (\$ millions):		411.5	

Table 2. Gas Stand-alone Production Tax Calculation (July 2007 to June 2008) [Assuming Gas Line Operational]

FY 2008 Production Tax Revenues: 4.5 bcf /day Hypothetical Gas Sales (Standalone Production Tax Calculation)
(US Gas Price Data from EIA)

										Total				
EIA U.S. Wellhead Price		Per BOE Total Costs for Gas	Per Barrel Production Tax Value	Progressivity Threshold	PTV less Progressivity Threshold	PTV Rate per Dollar of Adjusted PTV	Incremental Progressivity Rate	Volume (Millions boe)	Progressivity Tax (Gas Calculated Separately)	Base Production Tax (BPT) Rate	Base Production Tax (BPT) Value	Production Tax (BPT + Progressivity) Value	CPT + BPT less Investment Credits	
Month	\$/mcf	\$/boe	PTV \$/boe	\$/boe	\$/boe	%	%	millions boe	\$ millions	%	\$ millions	\$ millions	\$ millions	
A	B	C	D=	E	F=	G	H=	I	J=	K	L=	M=	N=	
2007/2008			(B + C)		(D + E)>=0		(F * G)		(D * H * I)		(D * I * K)	(J + L)	(M - P)	
Monthly Analysis, \$30 PTV \$/boe threshold and 0.004% progressivity parameter under Current Law as enacted in 2007														
Jul	6.32	-28.46	9.46	-30	0.00	0.40%	0.00%	23.3	0.0	25.00%	55.2	55.2		
Aug	5.87	-28.46	6.76	-30	0.00	0.40%	0.00%	23.3	0.0	25.00%	39.4	39.4		
Sep	5.42	-28.46	4.06	-30	0.00	0.40%	0.00%	22.6	0.0	25.00%	22.9	22.9		
Oct	5.90	-28.46	6.94	-30	0.00	0.40%	0.00%	23.3	0.0	25.00%	40.5	40.5		
Nov	6.58	-28.46	11.02	-30	0.00	0.40%	0.00%	22.6	0.0	25.00%	62.2	62.2		
Dec	6.97	-28.46	13.36	-30	0.00	0.40%	0.00%	23.3	0.0	25.00%	77.9	77.9		
Jan	6.99	-28.46	13.48	-30	0.00	0.40%	0.00%	23.3	0.0	25.00%	78.6	78.6		
Feb	7.55	-28.46	16.84	-30	0.00	0.40%	0.00%	21.8	0.0	25.00%	91.8	91.8		
Mar	8.29	-28.46	21.28	-30	0.00	0.40%	0.00%	23.3	0.0	25.00%	124.0	124.0		
Apr	8.94	-28.46	25.18	-30	0.00	0.40%	0.00%	22.6	0.0	25.00%	142.0	142.0		
May	9.81	-28.46	30.40	-30	0.40	0.40%	0.16%	23.3	1.1	25.00%	177.2	178.3		
Jun	10.82	-28.46	36.46	-30	6.46	0.40%	2.59%	22.6	21.3	25.00%	205.7	226.9		
							Totals:	275.3	22.4	25.00%	1117.4	1139.8	1139.8	
Data Source: EIA for gas price										TT&T (\$/mcf):		4.5		
Hypothetical gas production (bcf/day):			4.5	274.5 millions boe in FY2008			Lease Expenditures (\$/boe)		1.46	TT&T (\$/boe):		27.00	Capex Credits (\$ millions):	0.0
Combined Production Tax Calculated on an oil + gas stand-alone calculation:												8622.1	8210.6	

Table 3. Oil & Gas Combined Production Tax Calculation (July 2007 to June 2008)

FY 2008 Production Tax Revenues: Oil plus Gas Combined														
(Analysis Assumes Actual Oil Plus Hypothetical Gas)														
Oil + Gas										Base				
	Oil + Gas Effective BOE Price	Effective Per BOE Total Costs	Per Barrel Production Tax Value	Progressivity Threshold	PTV less Progressivity Threshold	PTV Rate per Dollar of Adjusted PTV	Incremental Progressivity Rate	Oil + Gas Volume (Millions boe)	Combined Progressivity Tax (CPT)	Base Production Tax (BPT) Rate	Production Tax (BPT) Value	CPT + BPT Value	CPT + BPT less \$400 in credits	
Month	\$/boe	\$/boe	PTV \$/boe	\$/boe	\$/boe	%	%	millions boe	\$ millions	%	\$ millions	\$ millions	\$ millions	
A	B	C	D=	E	F=	G	H=	I	J=	K	L=	M=	N=	
			(B + C)		(D + E)>=0		(F * G)		(D * H * I)		(D * I * K)	(J + L)	(M - P)	
Monthly Analysis, \$30 PTV \$/boe threshold and 0.004% progressivity parameter under Current Law as enacted in 2007														
Jul	55.22	-25.92	29.30	-30	0.00	0.40%	0.00%	42.8	0.0	25.00%	313.4	313.4		
Aug	52.79	-25.92	26.87	-30	0.00	0.40%	0.00%	42.8	0.0	25.00%	287.4	287.4		
Sep	54.09	-25.92	28.17	-30	0.00	0.40%	0.00%	41.4	0.0	25.00%	291.6	291.6		
Oct	57.87	-25.92	31.95	-30	1.95	0.40%	0.78%	42.8	10.7	25.00%	341.8	352.4		
Nov	63.83	-25.92	37.91	-30	7.91	0.40%	3.16%	41.4	49.7	25.00%	392.4	442.1		
Dec	63.13	-25.92	37.21	-30	7.21	0.40%	2.88%	42.8	45.9	25.00%	398.0	443.9		
Jan	64.34	-25.92	38.42	-30	8.42	0.40%	3.37%	42.8	55.4	25.00%	411.0	466.4		
Feb	67.66	-25.92	41.74	-30	11.74	0.40%	4.69%	40.0	78.4	25.00%	417.6	496.0		
Mar	74.92	-25.92	49.00	-30	19.00	0.40%	7.60%	42.8	159.3	25.00%	524.1	683.4		
Apr	80.37	-25.92	54.45	-30	24.45	0.40%	9.78%	41.4	220.5	25.00%	563.6	784.1		
May	89.15	-25.92	63.23	-30	33.23	0.40%	13.29%	42.8	359.6	25.00%	676.3	1035.9		
Jun	96.26	-25.92	70.34	-30	40.34	0.40%	16.14%	41.4	470.0	25.00%	728.1	1198.1		
Totals:								505.2	1449.3	25.00%	5345.5	6794.9	6383.4	
Difference Between Production Tax Calculated on a combined Oil & Gas Basis Minus Standalone Oil and Gas Basis:												-1827.2	-1827.2	P
												Capex Credits (\$ millions):		411.5