

**Attachment 5: Supplemental Information on Petroleum Exploration and Production Activities (Unaudited)****(A) PTTEP and Our Subsidiaries' Petroleum Reserves Report as of December 31, 2018**

The total Proved Reserves of PTTEP and our subsidiaries as of December 31, 2018 are shown in the attached table. The Proved Reserves are reviewed annually by Company's earth scientists and reservoir engineers to ensure rigorous professional standards. The Proved Reserves are reported on a gross basis, which includes the Company's net working interest and related host country's interest.

Furthermore, in order to improve efficiency, check and balance of the reserves estimation, reporting and disclosure, the company maintains a Reserves Committee which has the following roles and responsibilities:

- Review and endorse the Company's Annual Reserves
- Review and approve Major Changes of Reserves, and Reserves for Newly-Acquired Project
- Ensure that all activities that related to reserves estimation and disclosure of reserves information conform to regulatory and legal requirements as well as to corporate and international standards
- Approve Annual Reserves Audit Plan, appoint Reserves Auditor, as well as approve Reserves Audit Report to ensure compliance with Company's framework and continual process improvement

As of December 31, 2018, the total amount of Proved Reserves of PTTEP Group's projects was 164 million stock-tank barrels (MMSTB) of crude oil and condensate<sup>1</sup>, and 3,286 billion standard cubic feet (BSCF) of natural gas or 513 million barrels of oil equivalent (MMBOE). The total amount of Proved Reserves in terms of oil equivalent in consolidation was therefore 677 MMBOE. Proved Reserves of crude and condensate are approximately 24% while, for gas, are 76% of the total Proved Reserves in terms of oil equivalent.

In 2018, the total production of PTTEP Group was 131 MMBOE, consisting of 34 MMSTB of crude oil and condensate<sup>1</sup> and 612 BSCF or 97 MMBOE of natural gas. This was equivalent to the production rate of approximately 359,386 barrels of oil equivalent per day (BOED), which was approximately 11,878 BOED or 3.4% increase from the previous year. The increase was mainly due to the acquisition of the additional 22.2222% participating interests in the Bongkot Project and high nomination from buyer in MTJDA and Contract 4 projects.

<sup>1</sup> Include the proved reserves and production of LPG

## PTT Exploration and Production Public Company Limited

Crude Oil and Condensate and Natural Gas Proved Reserves <sup>(1)</sup>

	Crude Oil and Condensate <sup>(2)</sup>			Natural Gas			Barrel of Oil Equivalent		
	(MMSTB)			(BSCF)			(MMBOE)		
	Domestic	Foreign	Total	Domestic	Foreign	Total	Domestic	Foreign	Total
Company's share of reserves of consolidated companies									
As of December 31, 2016	108	62	170	2,018	1,353	3,371	438	257	695
1) Revision of previous estimates	11	(0)	11	77	(50)	27	24	(7)	17
2) Improved recovery	2	1	3	9	0	9	4	1	5
3) Extensions and discoveries	4	3	7	109	111	220	22	19	41
4) Purchases/Sales of Petroleum in place	-	-	-	-	-	-	-	-	-
5) Production	(26)	(9)	(35)	(389)	(189)	(578)	(90)	(37)	(127)
As of December 31, 2017	99	57	156	1,824	1,225	3,049	398	233	631
Company's share of reserves of consolidated companies									
As of December 31, 2017	99	57	156	1,824	1,225	3,049	398	233	631
1) Revision of previous estimates	19	5	24	108	51	159	36	14	50
2) Improved recovery	5	0	5	57	13	70	14	2	16
3) Extensions and discoveries	14	1	15	368	3	371	72	1	73
4) Purchases/Sales of Petroleum in place	6	(8)	(2)	249	-	249	47	(9)	38
5) Production	(27)	(7)	(34)	(425)	(187)	(612)	(97)	(34)	(131)
As of December 31, 2018	116	48	164	2,181	1,105	3,286	470	207	677

(1) The Proved Reserves are reported on a gross basis which includes the Company's net working interest and the related host country's interest.

(2) LPG Included

**(B) Capitalized Costs Relating to Oil and Gas Producing Activities**

Capitalized costs represent cumulative expenditures for proved and unproved properties together with related accumulated depreciation, depletion, amortization and allowance for impairment.

Proved properties include exploration wells, development wells, transportation pipeline, producing facilities and decommissioning costs. Unproved properties represent amounts associated with capitalized cost of projects which have not yet found proved reserves.

(Unit: Million US Dollar)	2018	2017
Proved properties	26,731	27,120
Unproved properties	<u>4,956</u>	<u>5,098</u>
<b>Gross capitalized costs</b>	<b>31,687</b>	<b>32,218</b>
Accumulated depreciation, depletion, amortization and allowance for impairment	<u>(20,218)</u>	<u>(20,929)</u>
<b>Net capitalized costs</b>	<b><u>11,469</u></b>	<b><u>11,289</u></b>

**(C) Costs Incurred in Oil and Gas Property Acquisition, Exploration, and Development Activities**

Costs incurred in oil and gas property acquisition, exploration and development activities represent amounts both capitalized and charged to expense during the year.

Property acquisition costs include costs to purchase proved and unproved properties.

Exploration costs include geological and geophysical expenses, exploratory drilling cost as well as reservation fee for exploration blocks.

Development costs include costs associated with drilling and equipping development wells, improved recovery systems, facilities for extraction, treating, gathering and storage, producing facilities for existing developed reserves, and costs associated with transportation pipeline.

(Unit: Million US Dollar)	2018			2017		
	Domestic	Foreign	Total	Domestic	Foreign	Total
Acquisition of properties						
- Proved	1,314	-	1,314	-	-	-
- Unproved	-	26	26	-	-	-
Exploration costs	1	75	76	6	31	37
Development costs	<u>718</u>	<u>273</u>	<u>991</u>	<u>779</u>	<u>417</u>	<u>1,196</u>
<b>Total</b>	<b><u>2,033</u></b>	<b><u>374</u></b>	<b><u>2,407</u></b>	<b><u>785</u></b>	<b><u>448</u></b>	<b><u>1,233</u></b>

**(D) Results of operations for producing activities**

Results of operations from oil and gas producing activities for the year 2018 and 2017 are shown in the following table.

Operating expenses include lifting costs incurred to operate and maintain productive wells and related equipment.

Exploration expenses consist of geological and geophysical costs, and exploratory well write off expenses.

General administrative expenses are expenses directly related to oil and gas producing activities.

Depreciation, depletion and amortization expenses relates to capitalized costs incurred in acquisition, exploration and development activities, transportation pipeline, including amortized decommissioning costs.

Other expenses (income) mainly include impairment loss on assets, foreign exchange gains and losses directly related to oil and gas producing activities and other income.

Income tax expenses are based on the results of operations from petroleum producing activities.

General corporate overhead and finance costs are excluded from the results of operations for petroleum producing activities.

(Unit: Million US Dollar)	2018			2017		
	Domestic	Foreign	Total	Domestic	Foreign	Total
<b>Gross revenues</b>						
Sales – Related parties	3,745	1,085	4,830	2,929	1,066	3,995
Sales – Third parties	304	465	769	228	390	618
<b>Total sales</b>	<b>4,049</b>	<b>1,550</b>	<b>5,599</b>	<b>3,157</b>	<b>1,456</b>	<b>4,613</b>
<b>Expenses</b>						
Operating expenses	436	497	933	372	511	883
Exploration expenses	2	43	45	25	27	52
General administrative expenses	35	76	111	49	62	111
Petroleum royalties and remuneration	470	-	470	368	-	368
Depreciation, depletion and amortization	1,371	459	1,830	1,092	537	1,629
Other (income) / expenses	(14)	83	69	(18)	538	520
<b>Total expenses</b>	<b>2,300</b>	<b>1,158</b>	<b>3,458</b>	<b>1,888</b>	<b>1,675</b>	<b>3,563</b>
<b>Results before income taxes</b>	<b>1,749</b>	<b>392</b>	<b>2,141</b>	<b>1,269</b>	<b>(219)</b>	<b>1,050</b>
Income tax expenses	573	237	810	367	63	430
<b>Net results of operations</b>	<b>1,176</b>	<b>155</b>	<b>1,331</b>	<b>902</b>	<b>(282)</b>	<b>620</b>

# (E) Standardized Measure of Discounted Future Net Cash Flows (SMDCF) Relating to the Proved Oil and Gas Reserves

The standardized measure of discounted future net cash flows related to the above proved oil and gas reserves, is computed by applying 12-month average prices\* (with consideration of price changes only to the extent provided by contractual arrangements), to the estimated future production of year-end remaining proved oil and gas reserves less estimated future expenditures (based on year-end costs) to be incurred in developing and producing the proved reserves.

Future income taxes are calculated by applying the appropriate year-end statutory tax rates to the future pre-tax net cash flows and deducted by applicable tax deductions or tax credits.

Net Cash flows are discounted using a rate of 10% per year to reflect the estimated timing of the future cash flows.

The estimation of discounted future net cash flow shown below is not intended to represent the fair value of oil and gas properties. The fair value should take into account of several factors, such as probable and possible reserves which may turn into proved reserves in the future, anticipated future oil and gas prices, interest rates, changes in development and production costs and risks associated with future production. Therefore the fair value will subject to the view and perception of analyst.

\* Twelve-month average prices are calculated as the unweighted arithmetic average of the first-day-of-the-month price for each month.

## Standardized Measure of Discounted Future Net Cash Flows Relating to Prove Oil and Gas Reserves

(Unit: Million US Dollar)	Domestic		Foreign		Total	
	2018	2017	2018	2017	2018	2017
Future cash inflows	16,164	12,220	6,759	6,463	22,923	18,683
Future production costs	(2,660)	(2,335)	(1,251)	(1,710)	(3,911)	(4,045)
Future development costs	(6,048)	(4,552)	(933)	(1,301)	(6,981)	(5,853)
Future income tax expenses	<u>(2,288)</u>	<u>(1,721)</u>	<u>(945)</u>	<u>(723)</u>	<u>(3,233)</u>	<u>(2,444)</u>
Future net cash flows	5,168	3,612	3,630	2,729	8,798	6,341
10% annual discount	<u>(818)</u>	<u>(93)</u>	<u>(1,169)</u>	<u>(849)</u>	<u>(1,987)</u>	<u>(942)</u>
Standardized measure of discounted future net cash flows (SMDCF)	<u>4,350</u>	<u>3,519</u>	<u>2,461</u>	<u>1,880</u>	<u>6,811</u>	<u>5,399</u>

## Changes in Standardized Measure of Discounted Future Net Cash Flows Relating to Proved Oil and Gas Reserves

(Unit: Million US Dollar)	2018	2017
Present value at beginning of year	5,399	5,653
Sales and transfers of oil and gas produced, net of production costs during period	(3,767)	(3,386)
Development costs incurred during the period	1,145	1,320
Net changes in prices and production costs	3,216	335
Net changes in development costs	(564)	(149)
Extensions, discoveries and improved recovery	1,412	837
Revisions of previous quantity estimates	579	384
Purchases / sales of petroleum in place	1,225	-
Accretions of discount	(1,045)	45
Net changes in income taxes	(789)	360
Present value at the year end	<u>6,811</u>	<u>5,399</u>

# (F) Other Information

## Productive Oil/Condensate and Gas Wells

The numbers of productive wells at December 31, 2018 were as follows:

	Oil/Condensate		Gas	
	Gross	Net	Gross	Net
Thailand	677	438	1,515	699
Foreign				
Southeast Asia	39	10	251	124
Others	14	5	-	-
Total	730	453	1,766	823

## Drilling in Progress of Oil/Condensate and Gas Wells

The numbers of wells in progress at December 31, 2018 were as follows:

	Gross	Net
<u>Exploratory</u>		
Thailand	-	-
Foreign		
Southeast Asia	1	0.78
Others	-	-
Total	1	0.78
<u>Development</u>		
Thailand	21	11.10
Foreign		
Southeast Asia	4	2.09
Others	-	-
Total	25	13.19

## Net Oil/Condensate and Gas Wells Drilled Annually in 2018

	Net Productive well drilled	Net dry well drilled
<u>Exploratory</u>		
Thailand	-	-
Foreign		
Southeast Asia	-	-
Others	-	-
Total	-	-
<u>Development</u>		
Thailand	228.82	1.20
Foreign		
Southeast Asia	41.52	-
Others	-	-
Total	270.34	1.20

Gross wells include the total number of wells in which PTTEP Group has an interest excluding utility wells.

Net wells are the sum of the PTTEP Group's fractional interests in gross wells.



Quarterly Information in 2018 and 2017 for the consolidated financial statement are as follows:

Unit: US Dollar

<u>Year 2018</u>	<u>4thQ</u>	<u>3rdQ</u>	<u>2ndQ</u>	<u>1stQ</u>
<b>Revenues</b>				
Sales	1,411,017,765	1,337,321,462	1,293,593,282	1,160,877,348
Revenue from pipeline transportation	29,190,306	29,987,855	25,367,013	23,018,560
Other income				
Gain on foreign exchange	-	-	-	25,062,316
Interest income	22,703,516	19,802,410	20,873,464	19,973,276
Gain on financial derivatives	71,955,087	-	-	-
Other income	21,530,874	10,632,882	7,900,369	10,719,935
<b>Total Revenues</b>	<b>1,556,397,548</b>	<b>1,397,744,609</b>	<b>1,347,734,128</b>	<b>1,239,651,435</b>
<b>Expenses</b>				
Operating expenses	168,808,730	166,176,601	168,992,974	141,105,849
Exploration expenses	9,022,944	18,637,627	15,277,426	2,747,477
Administrative expenses	104,706,341	69,634,574	58,439,352	57,453,370
Petroleum royalties and remuneration	133,659,700	121,414,377	110,641,320	103,947,632
Depreciation, depletion and amortization	484,519,932	496,344,211	459,708,136	407,938,260
Other expenses				
Loss on foreign exchange	7,386,463	6,059,895	30,248,049	-
Loss on financial derivatives	-	6,808,271	7,553,864	43,626,319
Other expenses	20,745,077	37,022,924	-	-
Finance costs	66,885,106	57,421,070	57,212,601	57,046,118
<b>Total Expenses</b>	<b>995,734,293</b>	<b>979,519,550</b>	<b>908,073,722</b>	<b>813,865,025</b>
Share of profit of associates and joint ventures	1,699,603	2,285,467	1,848,770	2,098,428
<b>Profit (loss) before income taxes</b>	<b>562,362,858</b>	<b>420,510,526</b>	<b>441,509,176</b>	<b>427,884,838</b>
Income taxes	(294,011,392)	(105,156,779)	(328,480,261)	(5,009,755)
<b>Profit for the year</b>	<b>268,351,466</b>	<b>315,353,747</b>	<b>113,028,915</b>	<b>422,875,083</b>
<b>Basic earnings per share</b>				
Continuing operations	0.07	0.07	0.03	0.10

Unit: US Dollar

<u>Year 2017</u>	<u>4thQ</u>	<u>3rdQ</u>	<u>2ndQ</u>	<u>1stQ</u>
<b>Revenues</b>				
Sales	1,202,119,165	1,063,670,938	975,323,588	1,040,091,549
Revenue from pipeline transportation	22,172,556	24,884,575	17,488,758	13,259,364
Other income				
Gain on foreign exchange	13,906,376	23,129,564	10,803,831	3,561,976
Interest income	18,474,470	12,994,974	15,236,804	12,872,725
Gain on financial derivatives	-	-	-	6,244,406
Other income	14,089,489	9,164,581	13,467,704	16,550,749
Total Revenues	1,270,762,056	1,133,844,632	1,032,320,685	1,092,580,769
<b>Expenses</b>				
Operating expenses	168,080,012	162,191,500	152,874,578	141,915,277
Exploration expenses	23,078,034	8,468,079	19,302,802	1,344,636
Administrative expenses	106,140,710	51,328,478	51,646,957	42,254,790
Petroleum royalties and remuneration	102,391,207	89,664,243	84,302,712	91,499,703
Depreciation, depletion and amortization	435,662,557	413,462,171	381,268,098	419,826,900
Other expenses				
Loss on financial derivatives	28,377,168	3,318,724	2,955,898	-
Impairment loss on assets	-	558,214,042	-	-
Finance costs	57,294,151	56,582,968	55,476,839	56,873,468
Total Expenses	921,023,839	1,343,230,205	747,827,884	753,714,774
Share of profit of associates and joint ventures	2,588,042	2,319,103	2,676,899	2,161,371
<b>Profit (loss) before income taxes</b>	<b>352,326,259</b>	<b>(207,066,470)</b>	<b>287,169,700</b>	<b>341,027,366</b>
Income taxes	(63,317,211)	(57,351,361)	(67,303,990)	8,401,312
<b>Profit (loss) for the period from continuing operations</b>	<b>289,009,048</b>	<b>(264,417,831)</b>	<b>219,865,710</b>	<b>349,428,678</b>
Profit (loss) for the period from discontinued operations - net of tax	(347,441)	-	-	-
<b>Profit (loss) for the period</b>	<b>288,661,607</b>	<b>(264,417,831)</b>	<b>219,865,710</b>	<b>349,428,678</b>
<b>Basic earnings (loss) per share</b>				
Continuing operations	0.07	(0.07)	0.04	0.09
Discontinued operations	(0.0001)	-	-	-

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Petroleum Sales Volume and Average Unit Prices

	2018	2017
Net sales of petroleum (BOED)	305,522	299,206
Average petroleum unit prices		
Average unit prices of crude oil and condensate (USD/BBL)	67.40	52.26
Average unit prices of natural gas (USD/MMBTU)	6.42	5.59
Average unit prices of petroleum (USD/BOE)	46.66	39.20
Lifting cost (USD/BOE)	4.33	4.19