



Additional Arthit Gas Sales Initiative



PTTEP



Additional Arthit Gas Sales Initiative

Starting Date: [01 01 2021]

Completion Date: [01 02 2022]

Number of Team Members: [29]

Category: ☐ **Merger & Acquisition (M&A)**

☐ **Exploration**

☒ **Production and Process**



Team Member



OUR TEAM

No.	ID	Name-Surname	Contribution (Core Team, Major Support, Or On-call Support)	FG	Dept.	Company Name
1	48223	Angkhana Phakchinda	Core team	PDT	PTF2	PTTEP
2	57044	Arporn Aranwattananon	Major support	PDT	PBJ	PTTEP
3	54120	Arthit Asavametha	Core team	SBD	SPC	PTTEP
4	57046	Chanon Usawinchai	On call support	PDT	PFO2	PTTEP
5	46023	Jureeporn Kitirojphan	On call support	PDT	PME	PTTEP
6	64134	Kalsuda Plangsiri	On call support	SBD	SPC	PTTEP
7	52845	Kasiya Suttidet	Core team	SBD	SEP	PTTEP
8	45812	Kittitat Moolasart	On call support	EDE	EAL	PTTEP
9	57086	Manapat Songsuwan	Core team	PDT	PFP2	PTTEP
10	45855	Maneenapang Bunnag	On call support	PDT	PTF2	PTTEP
11	56128	Manisa Sangwattanachai	On call support	PDT	PFO2	PTTEP
12	55050	Metsai Chaipornkaew	Core team	GSX	GRE	PTTEP
13	55160	Mongkol Tantiviwattanawongsa	On call support	PDT	PDP	PTTEP
14	41725	Narisara Boonpakorn	Core team	PDT	PTF2	PTTEP
15	47105	Natthapon Putthaworapoom	On call support	PDT	PMP	PTTEP
16	47118	Pakorn Loviruchsutee	On call support	PDT	PFP2	PTTEP
17	51679	Pat Kachondham	On call support	PDT	PFP2	PTTEP
18	50514	Patcharin Kingphakorn	Major support	PDT	PLC	PTTEP
19	46031	Phanuwat Jitputti	On call support	PDT	PFO2	PTTEP
20	61049	Pimpisa Pechvijitra	On call support	EDE	EFE	PTTEP
21	54123	Prarop Sirisali	Core team	CLG	-	PTTEP
22	48398	Prueksarat Ampaiwan	On call support	PDT	PFP2	PTTEP
23	45834	Surapong Pimthong	On call support	PDT	PFP2	PTTEP
24	48358	Teerath Srikijkarn	Core team	PDT	PFP2	PTTEP
25	48348	Thanita Kiatrabile	Core team	PDT	PFP2	PTTEP
26	50554	Thirawat Sanitmuang	On call support	PDT	PAJ	PTTEP
27	48378	Urissa Thunmasarnrit	On call support	PDT	PTF2	PTTEP
28	56203	View Koonsiripaiboon	Core team	SBD	SPC	PTTEP

Project Leader Name Thanita Kiatrabile ext.no. 800-4018 Mobile phone 094-392-9824

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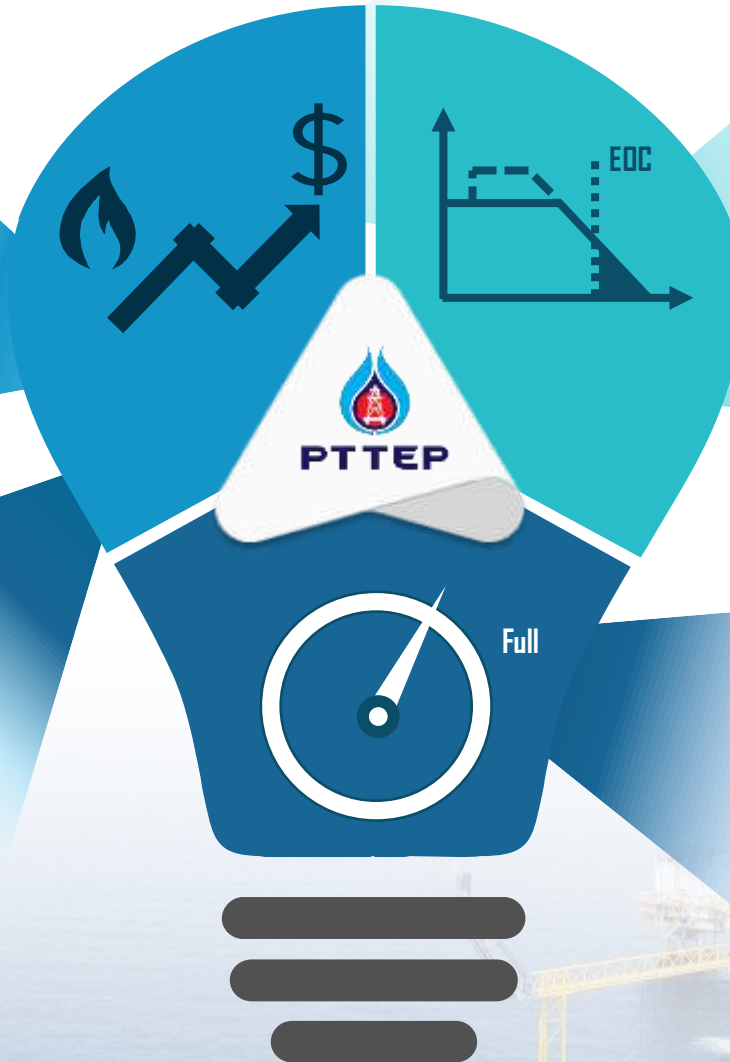
Project Objectives

Fulfill Thailand gas demand and reduce import of high price LNG by increasing ART sales gas from 220 to 280 MMscfd

Increase Arthit reserves by converting contingent resources into in reserves

Improve Arthit project NPV and IRR by increasing gas sales **volume and price**

Maximizing usage of Arthit facilities together with open opportunity gas sales up to 330 MMscfd



Opportunities

- 🔔 In 2020, team foreseen that **wet gas for GoT will not be sufficient to meet GSP demand after April 2022.**
- 🔔 During 2021, team also expected that the lack of gas situation is likely to happen at the beginning of 2022 or earlier.



Challenges

- ☯ In order to deliver higher DCQ, Arthit need additional reserves.
- ☯ To add reserves, Even though Arthit gas price is the highest in GoT, **JV Partners still require to get higher gas price to justify new developments of additional volume.**
- ☯ The new GSA negotiation **involve many stakeholders and can take longer time to finalize.**

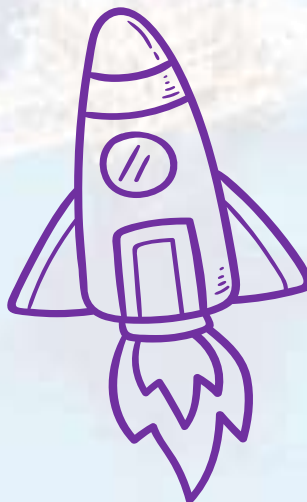


Project Summary - Target



- ✓ To get **new GSA signed and start new DCQ before 1 May 2022** with option of “**Early Effective Period**” during 1 Jan 22 – 1 May 2022 to serve lack of gas supply

- ✓ To ensure **smooth operation during start-up period** and have sufficient long term gas potential after applied new DCQ



Project Summary - Action



To formulate a new development plan to support higher DCQ and respond to any subsurface technical details with DMF and committee meetings

To develop plan, evaluate additional costs and ensure enough budget to support new development plan

To formulate and coordinate all related commercial works, negotiate with PTT, align strategies with Partners and obtain approval of new GSA Amendment from DMF and Petroleum committee

Subsurface

Production

Planning

Economist

Commercial

Legal

To evaluate and prepare production facilities and operation to be ready for higher DCQ, team test run Arthit CPP at 280 MMSCFD in Aug 2021

To conduct gas price comparison and economic evaluation

To development relevant agreements and documents, and provide legal advice professionally



Project Summary - Result

- Arthit GSA 6th amendment

- ✓ Submitted on 7 Oct 2021,
- ✓ Signed on 28 Jan 2022,
- ✓ Started delivery on 1 Feb 2022
(3 months earlier than base plan)
- ✓ No interruption and no shortfall

- Key terms of the 6th Amendment to GSA

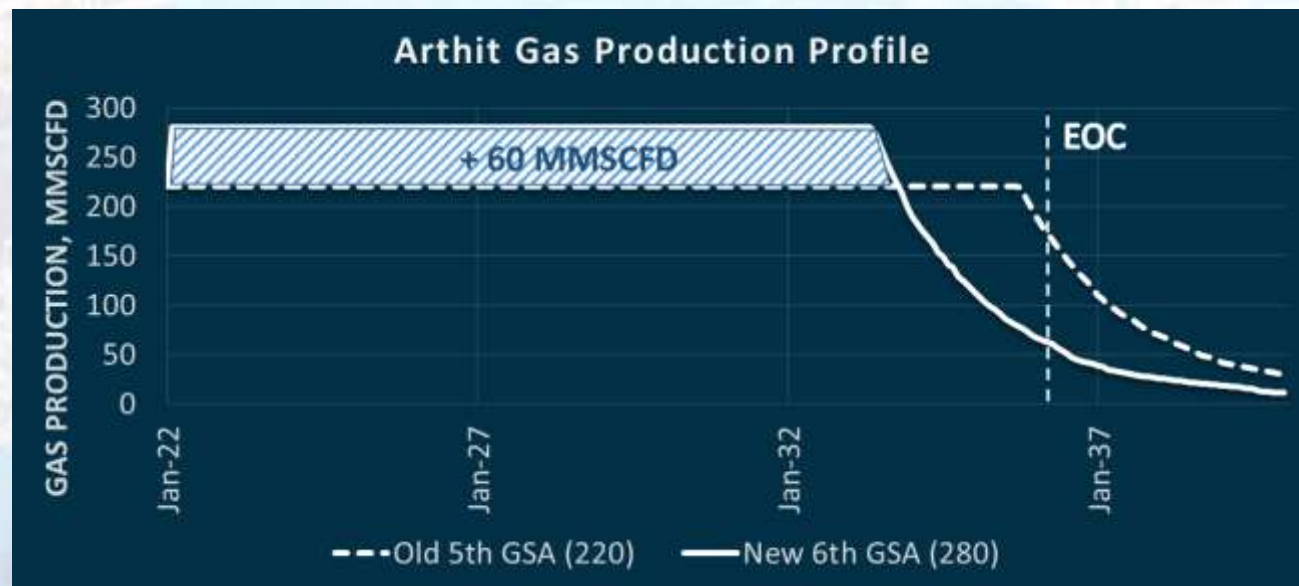
- ✍ New DCQ 280 MMscfd with option to change after 1 Jan 2025 (with 3 months prior notice)
- ✍ New gas price at 7.6 USD/MMBTU* (previous price at 7.1 USD/MMBTU)
- ✍ Maintain 5% swing volume
- ✍ Option to early deliver gas at new DCQ (1 Jan 22 – 1 Apr 2022)

*Corporate price assumption as of Q4-2021

1) Benefits to PTTEP

- Additional DCQ of 60 MMSCFD could generate **105 MM\$** per year and improve NPV at **746 MM\$** at 10 % discount rate.

- Increase 2P reserves (until 31 Dec 2024) by **5 MMBOE** (PTTEP share) as per minimum requirement with up to **29 MMBOE** by exercise option to extend the high DCQ until EOC.



2) Benefit / Cost Ratio



COST: Total project costs = 119 MMUSD



BENEFIT: Total additional revenue = 1,160 MMUSD
(2022-2032) from

- More volume from new GSA
- Price increase (7% increase while Arthit already be the highest one in GoT)
- Maintain 5% swing volume (lowest in the GoT)
- Development additional resources of 29 MMBOE

Net benefit / cost ration is **10.8 times** with sufficient gas potential to fulfill new DCQ until end of 2024.



3) Non-Value Activity Elimination



Minimize waste timing after MoEN approved. Arthit started deliver gas at new DCQ on 1 Feb 2022, 3 months earlier than plan on 1 May 2022.



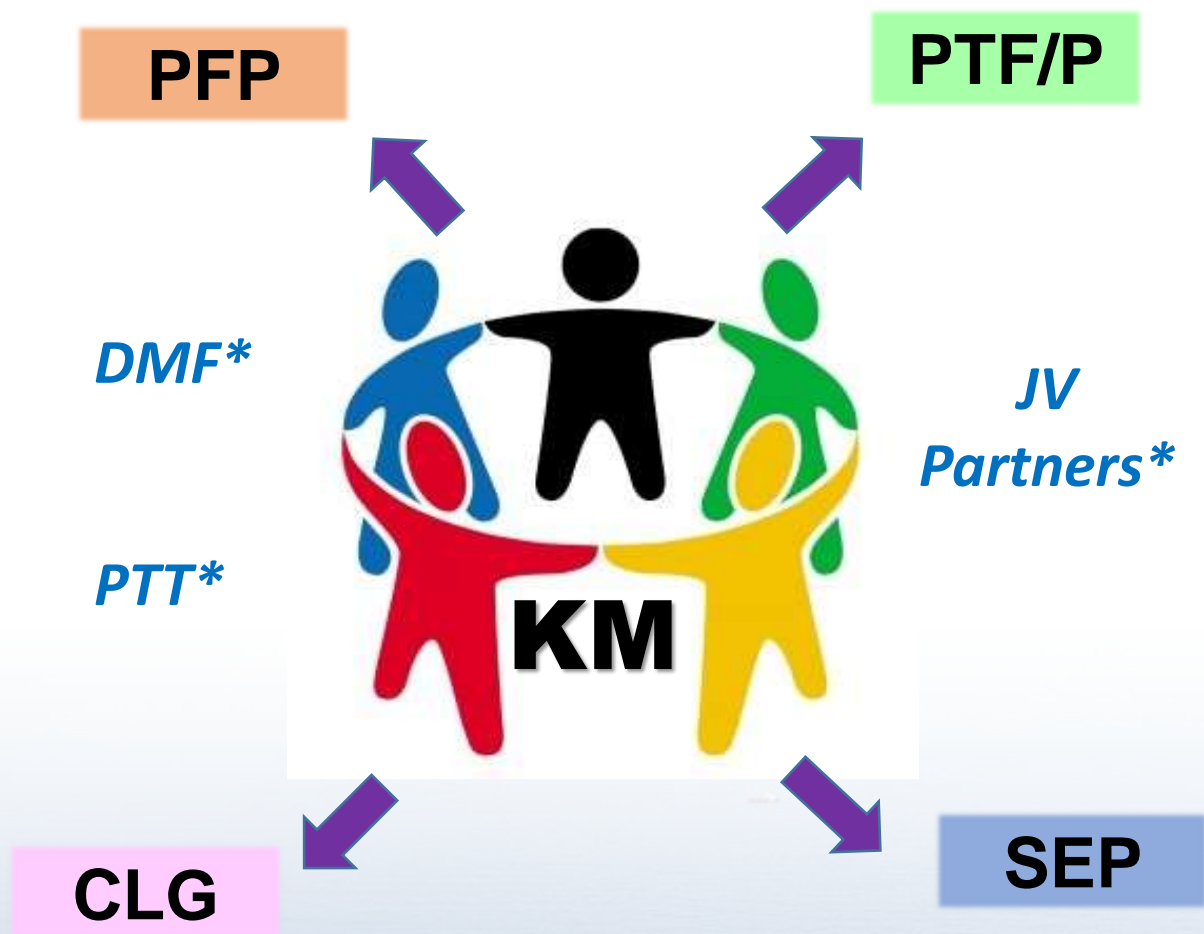
Maximize use of under-utilized facilities (max capacity 417 MMscfd / previous production 220 MMscfd)



Accelerate production from contingent resources (beyond concession) and add reserves up to 29 MMBOE



4) Knowledge Management



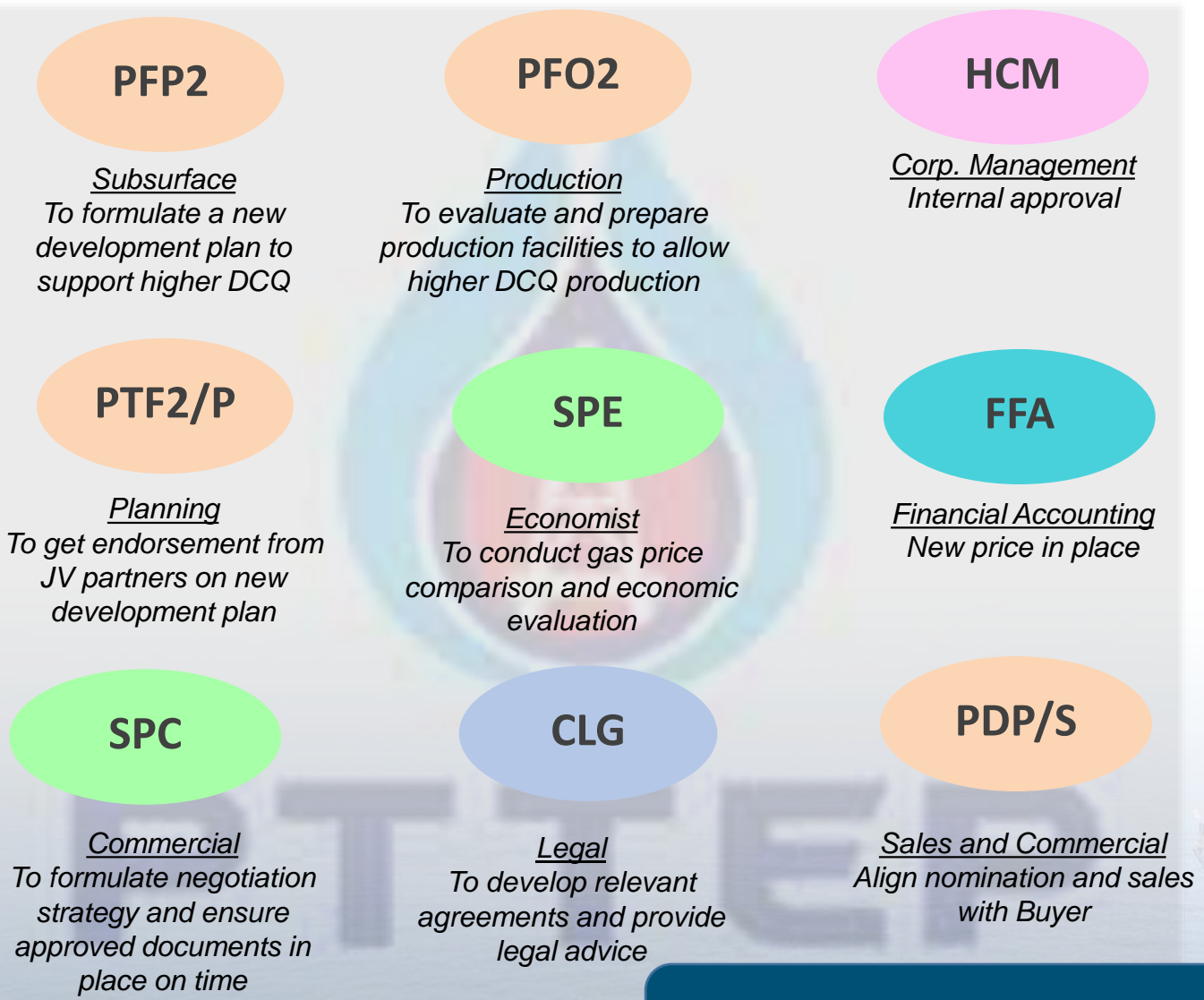
- GSA amendment and approval process was shared across divisions e.g., PFP, PTF/P, SEP, CLG, etc.

(Due to strictly confidential information, KM could not be disclosed to non-related parties.)

**Deep details discussion and clarification*



5) Team Collaboration Effort



More than 3 FGs
+ JV Partners + PTT + DMF



Self Evaluation

Criteria 2018	Weight	Rating Scale					Rating 1-5
		1	2	3	4	5	
1. Benefits to PTTEP (Annualized NPV)	40%	<0.5 million USD/yr	0.5-3.5 million USD/yr	>3.5-6.5 million USD/yr	>6.5-9.5 million USD/yr	>9.5 million USD/yr	5
		For non-financial benefit, the score will be considered based on level of benefit in relation to that particular work group/function.					
2. Benefit / Cost Ratio (Benefit / CAPEX + OPEX)	25%	Benefit > cost = 2 times	Benefit > cost = 4 times	Benefit > cost = 6 times	Benefit > cost = 8 times	Benefit > cost = 10 times, Proved Sustain	5
3. Transformation 3.1 Non-Value Activity elimination	15%	<5%	10%	15%	20%	>25%	5
4. Knowledge Management	10%	Capture within dept. (Lesson Learned)	Store in KM portal	Share across Div. (within PTTEP and/or PTT group)	Share & reuse across Div. (within PTTEP)	Share & reuse across Div. (within PTTEP & PTT group)	3*
5. Team Collaboration Effort	10%	Within Dept.	Across Dept.	Across Div.	Across FG (2-3 FG)	Across >3 FG	5

**Shared to related parties across division. Due to strictly confidential information, KM could not be disclosed to non-related parties.*

End of Presentation

