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Please fill in your manuscript title.	World's First Arsenic Removal from Condensate at Arthit Field, the Gulf of Thailand	
Please fill in your author name(s) and company affiliation.		
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Abstract

1. OBJECTIVES / SCOPE:

Arsenic and Mercury are main impurities in PTTEP's condensate product found in the Gulf of Thailand. Thus, a condensate decontamination process is necessary to enhance sale gas condition. Mercury is effectively removed by a proven filtration technology but not the case for arsenic. Launching Arsenic Removal Unit (ARU) and a field trial at Arthit gas field is a pioneer step prior scale up to implement in other PTTEP gas fields too.

2. METHODS, PROCEDURES, PROCESS:

After performed in-house tested with few technologies, adsorption with specific catalyst method is the best solution with approximately 90% removal efficiency. Scale-up of ARU and implementation at Arthit field was performed to ensure the ARU can successfully remove arsenic from the condensate at actual site conditions. In-housed PTTEP engineering team started the project execution with basic engineering. Then, awarded EPCI contract to qualified Contractor. Meanwhile, detail engineering and procurement of Long-Lead Equipment were performed in-housed to shorten overall project schedule. The ARU field trial at Arthit field will be pioneer step prior scale up to implement in other PTTEP's assets.

3. RESULTS, OBSERVATIONS, and CONCLUSIONS:

The ARU is a skid mounted package to ease mobility and shorten offshore installation period. The ARU has designed capacity around 4,670 BPD with footprint about 8x11x6 m. The ARU comprises of three processing stages. First stage, to pressure-up process with booster pump. Then, the arsenic removal process with four adsorbers which can operate in series or parallel to maximize its efficiency. Last stage is adsorber particle removal by filtration system to ensure that no particle from adsorbent will be released and contaminated any downstream system. After 14 months since started basic engineering, procurement, fabrication, installation and completely commissioned, the ARU has put into operation at Arthit Field since October 2021 until present with site performance around 80% arsenic removal efficiency in accordance with the design requirements.

4. NOVEL/ADDITIVE INFORMATION:

PTTEP is the first company who have studied and developed arsenic removal technology from condensate. The successful case of Arthit field trial is only the first step to realize this technology application. Next step is to expand this ARU technology and its application in other PTTEP gas fields to improve our sale gas condition which will also directly increase PTTEP revenues.

PTTEP takes the lead in the technology to remove arsenic from condensate products. This initiative is started from nothing to pilot plant and finally scale up to implement in the actual operation. After this project is executed, the product quality is guaranteed to meet customers' specifications with good feedback. The benefit of this project is cost saving from reducing the number of tanker demurrage, production improvement, and operational flexibility. Furthermore, this project could be a good model that can be adapted to other studies or higher investment with more confidence in the future.