

## **JP One Pipeline** **A Unique Pipeline Project - 33km x 14” .**

Thailand's New Suvarnabhumi (“Golden Land”) International Airport is being constructed to become a regional hub for Air travel and Aviation activities for the whole of South East Asia . It is built on 8000 acres of land and only 25 km from Down Town Bangkok .

To supply jet fuel to the new Airport, a 33km x 14” Pipeline is being built which will hot tap from the existing multiproduct white oils pipeline running from tank farms to the current International Airport. Mssrs Buree Whanchid (Technical leader )and Nipon Lumpiganon of the JP-One Asset Co Ltd ( which owns the Pipeline) highlight the many challenges in the construction and its critical role in the operation of the New Airport Services.

The Pipe line route will take it through Central Bangkok District, necessitating street works in busy, crowded locations . With major Road crossings planned near the Asoke , Srinakarin and other major roads , construction activities will need to be planned and scheduled for restricted working hours. .The logistics of supply of pipe, materials, equipment and manpower - will be critical . Standard pipe jacking/HDD construction methods will be modified with Poor Boy Spreads to meet these challenges.

The pipeline design and construction supervision is being undertaken by Penspen Ltd of the UK, an international company specialising in Design and Construction activities for oil and gas pipelines and terminal facilities worldwide. Penspen have also been responsible for design of the BAFS Pipeline Receipt and Transfer Facilities as well as the fuel depot, with variable speed hydrant pump facilities and the 24 inch airport fuel hydrant system- all of which are currently under construction.

Penspen's Engineering Manager, Simon Kitchen ,advises that the pipeline size has been optimized to utilize the existing pipeline pumping facilities and meet the projected fuel demand from the new pipeline..

The pipeline design is to ASME B 31.4 Code and based upon application of API 5L X52 linepipe. Design Pressure is 76.7 barg, and pipeline wall thickness is generally 7.14mm. Buried crossings sections have been designed according to API RP 1102 recommendations.

It will be internally epoxy lined for Jet Fuel service and welding specified for the joints , for optimal internal cleanliness.

Penspen's Construction Manager- Gordon J. Black views the construction issues as challenges that have to be factored into the planning and logistics with numerous Mainline and Poor Boy crews that will work simultaneously to execute the large number of crossings and Special sections

The Pipeline route will cross klongs ( waterways ) and in certain locations limited space will lead to pipe bridging techniques as it will not be possible to trench or directionally drill .

As the route progresses , it will also need to cross several major highways , intersections, the Department of Highways Airport Access ROW and congested areas in between which will require closely controlled directional drilling including one HDD of approx 1200metres. .

The new Pipeline ROW generally follows the South Side of the Railway with some rail crossings .A major Challenge will be the restricted width of the ROW , due to the proximity of the railway on one side and adjacent private properties.

Extensive temporary works ( sheet piling ) will be needed and the pipe lay itself will require special techniques .

A large number of short pipe sections will require winching operations after welding of joints , NDT and coating holiday testing before lowering into padded prepared trenches for immediate backfill . This process will be repeated in the narrow restricted ROW areas..

Pipe laying will also be further challenged by having to weld and blast all the joints , then coat the field joints in this crowded , narrow ROW .

X-ray testing also presents unique challenges due to the proximity issues of the public . Storing and , securing of plant and equipment will also be an issue with respect to loss and vandalism .

Taking account of the difficult construction issues , pipeline coating selection involved trials and testing which led to the selection of a ( LPE) Liquid Polymer Epoxy coating (SP2888) as the mainline coating of choice over traditional FBE and Trilaminate (3LPE) coatings . The LPE coating ,SP2888 , exhibited ultra hardness characteristics , better abrasion resistance , flexibility and adhesion . The same coating could then be used as the mainline coating , as well as for the HDD sections, the field joint coating , the bends and used for repairs for any coating damage . In short a single coating could be used over the pipeline and thereby providing one uniform pipe line coating across the pipeline length. The selection of this coating also assisted the pipe procurement programme, with pipe procured bare ex Japan and coated onshore in Thailand. Profound Innovations Ltd., a local Thai company, with World class pipe coating facilities, won the contract to coat the Pipe and 'Blondie Robinson ' – its Manager – says these new SP2888 LPE coatings have worked well and is a much easier coating to work with, than traditional FBE or 3LPE coatings . Pipeline construction is scheduled to be completed in 2005.

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