JUSTIFICATION REGARDING ALTERNATIVES EXAMINED FOR LINEAR PROJECT

Alternatives Explored for Krishnapatnam - Hyderabad Pipeline Project: KHPL Project of Bharat Petroleum Corporation Limited in Andhra Pradesh State		
Description	**Status of land**	**Area in Ha.**
Alternate-1	Forest	2.74
Alternate-2	Forest	8.5970
Alternate-3	Forest	8.0360

The other alternatives (Alternative-2 & Alternative-3) are being rejected on grounds of as follows: -

1) Alternative 2 & 3 involves more forest area 8.5970 and 8.0360 hectares respectively to be diverted which is more than the alternative-1.
2) In Alternative -2 the pipeline will be in close proximity to the sensitive sanctuary area. Laying of pipeline in the sanctuary sensitive area is technically not feasible involving safety of the pipeline.
3) The terrain in Alternative Route-2 and 3 is hilly where laying of pipeline poses several construction challenges.
4) Alternative -2 passes near to the area where most of the lands are non-agriculture land and pipeline cannot be laid in NA lands as per P&MP Act'1962.
5) Though the overall length (Forest area and Non-forest area) of the pipeline is more in Alternative-2 which increases the project cost.
6) Alternative -3 passes in close proximity to populated areas and most of the lands are also non-agriculture land; pipeline cannot be laid in NA lands as per P&MP Act'1962.
7) Number of turning points (TPs) in Alternative 2 and 3 are more that needs bends etc which will add-on to the cost of the project.

Looking into the above, it is imperative for KHPL pipeline passing in Andhra Pradesh State in Alternative-1 is more apt technically and safety in comparison to the other two alternatives viz,. Alternative-2 and Alternative-3.

Date:

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Project Note

Bharat Petroleum Corporation Limited proposes to lay a new multi-product pipeline from Krishnapatnam (Andhra Pradesh) to Madharam (near Hyderabad, Telangana) via Ongole and spur lines from Madharam to Ghatkesar. The proposed pipeline will originate from BPCL's upcoming coastal installation at Krishnapatnam port, Tehsil Muthukur, District Nellore, Andhra Pradesh (AP) with Tap Off Point at BPCL's existing depot at Ongole and will be terminate at BPCL's proposed installation at Madharam (near Hyderabad) in village Madharam, District Medchal, Telangana State.

Dedicated despatch/pumping facility, pipeline manifold is envisaged at Krishnapatnam Despatch Terminal (KDT) for Krishnapatnam-Hyderabad Pipeline (KHPL). For receipt of product (MS/ HSD/ SKO) at Ongole Depot and at proposed POL Installation at Madharam from this pipeline, it is proposed to make pipeline receipt facilities at existing Ongole depot and at proposed POL Installation in Madharam.

BPCL's total volume assessed for transportation through Krishnapatnam-Hyderabad pipeline in commissioning year i.e., FY 2023-24 is 1.67 MMTPA and further volumes are as follows;

FY 2027-28 - 2.00 MMTPA FY 2032-33 – 2.57 MMTPA FY 2039-40 - 3.45 MMTPA

Accordingly, the pipeline capacities to take care of own and common carrier volumes will be designed as follows:

Phase I (Commissioning Year) : 2.6 MMTPA Phase II (FY 2028-29) : 4.4 MMTPA

In Andhra Pradesh and Telangana BPCL have 5 territories out of which 3 territories are in AP-Nellore, Vijayawada and Vizag and 2 territories are in Telangana – Hyderabad and Warangal.

The MS/HSD requirement in AP and Telangana is about 2.35 MMTPA and comes to 8.45 % of all India requirement in year 2018-19. The demand of AP is met from the installation at Vizag and the depots in Ongole, Vijayawada and Tada. The Telangana demand is predominantly met from Cherlapally depot and balance from the depot at Warangal. Presently BPCL is highly dependent on HPCL for product requirement in AP and Telangana. About 61% of MS/HSD was sourced from HPCL in year 2018-19 and balance product demand was met from BPCL's Kochi Refinery and Manmad Installation.

It is estimated that product supplies to AP and Telangana markets from BPCL Manmad installation and HPCL Vizag Refinery will decrease over a period of time due to growth in Maharashtra and increase in own demand of HPCL. Therefore to meet BPCL's growing market demand in AP and Telangana alternate sourcing of products needs to be envisaged.

Our Coastal facilities available at Vizag and Kakinada are constrained by congested ports and geographically not well situated to support these markets. Considering the same BPCL is setting up a coastal installation in Krishnapatnam Port, AP to receive product coastally from Kochi Refinery / Other Refineries / Imports and to supply products to our supply location in AP and Telangana.

The proposed multi-product pipeline from Krishnapatnam to Hyderabad will feed the markets currently fed from Ongole, Hyderabad and Warangal supply locations. The pipeline as proposed would lead a long way in strengthening our marketing infrastructure and lead to overall competitiveness.

This report deals with need, justification & benefits of laying a multi-product pipeline from Krishnapatnam Despatch Terminal to POL Terminal at Madharam- Hyderabad, pipeline system optimization, brief details of facilities, detailed cost estimates, environmental aspects, financial analysis and execution philosophy of the project.

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PROJECT REQUIREMENT & FACILITIES

The project envisages construction of 16 inch carbon steel API 5L X-65, 442 KM long multi-product pipeline from Krishnapatnam Despatch Terminal to proposed POL installation at Madharam with Tap Off Point (TOP) at Ongole depot. The pumping facilities of suitable capacity having Variable Frequency Drives (VFD) (1 working + 1 standby) shall be provided at Krishnapatnam Despatch Terminal to meet the required throughput. The facilities including pumps shall be designed in such a way so as to meet the Phase I throughput by Pumps at Krishnapatnam Despatch Terminal and Phase II by one no. Intermediate Pumping Station at approx. Ch. 228 KM.

To meet pigging requirement of Krishnapatnam Hyderabad Pipeline 3 nos. of intermediate pigging station shall be provided at Ongole, Ch. 228 Km and Ch. 331 Km.

Different sizes of pipelines were considered, for working out the appropriate sizing of the pipeline and accordingly, hydraulics and other studies were carried out for considered sizes Based on hydraulic study carried out for pipeline of 16 inch and 14 inch diameter and flow parameters for phase - I, no intermediate pumping station is envisaged for 16 inch option, while one no. intermediate pumping station would be required in case of 14 inch option. To meet the throughput requirement of phase – II, one no. intermediate pumping station will be required for 16 inch option and two nos. intermediate pumping stations will be required for 14 inch option.

The system shall have dedicated Tele-communication system and Supervisory Control and Data Acquisition (SCADA) system. The aim of SCADA is to ensure effective management and supervision of the pipeline operating from a centralized location using Remote Telemetry Units (RTUs) located in SV (Sectionalizing Valve) Stations / Despatch / Receipt Terminals of the pipeline. This system is also used for leak detection. The proposed pipelines shall be protected against corrosion externally by Impressed Current Cathodic Protection (ICCP) system and internally by dozing with Corrosion Inhibitors. Optical Fibre Cable (OFC) based Pipeline Intrusion Detection System shall be provided for the entire pipeline in line with operational requirement.

OPTIMISATION STUDY

For the purpose of optimization, a number of alternatives involving critical parameters such as pipeline diameter, pumping system capacity, operating cost etc. were considered for working out economics and selection of optimum size of pipeline.

For Optimization study two pipeline sizes i.e., 14 inch & 16 inch has been determined considering the Phase - II throughput of 4.40 MMTPA (including 25% common carrier capacity). The pipeline and the pumping facilities shall be suitable to pump for the same.

Based on optimization study, it is observed that 16 inch dia. pipeline would be the most optimum size from Krishnapatnam Despatch Terminal to POL installation at Madharam. The pipeline and its facilities have been designed for 600# pressure rating.

The Detailed Feasibility Report has been carried out for both 14 inch and 16 inch pipeline sizes.

The Pipeline design capacity that can be achieved with the proposed Dispatch Station at Krishnapatnam alone is 2.60 MMTPA. The Pipeline design capacity envisaged with the addition of Intermediate Pumping at Ch. 228 KM is 4.40 MMTPA.

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PROJECT COST

The costing has been carried out for the equipments for both 16 inch and 14 inch options. However, the area for developing pipeline facilities, have been considered for 16 inch option along with space provision for coalescer to be used for ATF handling system in future.

The following equipments have been excluded from the capital cost of this DFR:

a)Coalescer
b) ATF handling system

The capital cost of the multi-product (MS / HSD / SKO) pipeline from Krishnapatnam to Hyderabad (Madharam) is Rs. 1400 crores and capital cost of tankages and allied facilities at Krishnapatnam, Ongole and new installation at Madharam is Rs 563 crores. Cost of Interest During Construction (IDC) is Rs. 83 crores. Hence the total capital cost of projects is Rs. 2046 crores (including IDC).

PROJECT IMPLEMENTATION SCHEDULE: -

The project schedule has been considered as 33 months for mechanical completion after receipt of PNGRB Authorisation and 3 months for commissioning.

JUSTIFICATION FOR ROUTE SELECTION AND JUSTIFICATION FOR LOCATING THE PROJECT IN FOREST AREA

The criteria for route selection are

1.Optimum distance between source of supply and consumer location (demand points)
2.Avoidance of Wild Life Sanctuaries, Reserved Forest, Mining area and Defense establishment to the best possible.
3.Avoidance rocky marshy and low-lying areas
4.Safety of people and environment
5.Easy access to route during construction and operation.

The route was selected based on least disturbance to environment, forest, human habitation and aquatic bodies. It avoids National Parks and Wild Life Sanctuaries.

The selected route is optimized considering the above factors and connectivity between supply source and consumer location.

FINANCIAL & SOCIAL BENEFITS OF PROJECT

Pipelines are by far the most superior mode of transportation for petroleum products, as they have considerable advantage in being able to move large quantities of product quickly, economically and reliably over long distances with fewer associated impacts on the environment. It is for this reason that pipeline transportation is preferred over road and railway transportation. The general advantages of pipelines with special reference to the proposed pipeline are described below:

1. Pipeline, being underground, will involve lesser direct contact with the populace thereby reducing its hazardous impact as well as provide better overall safety.
2. Pipeline mode is mechanized and automatic with in-built safety features and therefore less liable to human errors.
3. Due to easier and accurate monitoring of transfer rate & volume with on- line instruments, the operator sitting in the control room can immediately detect any unsafe condition.

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4. Pipeline transportation minimises the detrimental environmental emissions associated with other modes of transport. It completely eliminates noise pollution.
5. There is no loss of product vapours in transport resulting in conservation of energy.
6. Pipeline transportation results in lower consumption of energy as compared to other modes of transport.
7. Installation of pipeline will contribute to socio-economic growth and development of the region.
8. Highest safety, most economical, energy efficient, environment friendly & minimum handling loss amongst all modes of transportation of gas.
9. Continuous, uninterrupted, silent and smooth transfer of custody.
10. Reduction/mitigation of hazards & risks by performing HAZID & HAZOP during detailed design stage.

The project will provide cleaner fuel stock for the industries and the population in the region and thus will help improve the environment considerably while inducing development.

The project would enhance employment opportunities through contractors for the local people during construction phase.

Consequent development activities due to availability of product in the region shall generate employment opportunities for the population and may improve their standard of life.

There will not be any adverse impact on communication and transportation.

Residential and populated areas will not be acquired for this project. Hence, there will be no displacement of population.

Transportation by pipeline is comparatively less expensive than other modes of transport both in capital and operating cost. This will ensure that this alternative source of energy is available to the consumers at a lower cost.

An additional advantage of transporting by pipeline is that the scope of economic offences like theft, pilferage, adulteration will be negligible and consumers will get value for money.

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