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TRANSIT AND TRANSPORT OF OIL AND GAS

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Tranzit a preprava ropy a zemného plynu

Abstract: Cieľom príspevku je vysvetliť úlohy a dôležitosť tranzitu a dopravy v ropnom a plynárenskom priemysle. Hlavné sú spomenuté spôsoby dopravy ropy a zemného plynu a analýzy používaných dopravných metód. V článku sú predstavené štyri základné spôsoby dopravy, pričom ďalšie spomenuté metódy majú alternatívny charakter. Článok sa venuje úlohám prepravy a súčasným postupom prepravy ropy a zemného plynu ako aj ďalším plánovaným rozvojovým stratégiám prepravných systémov na dopravu ropy a zemného plynu.

Kľúčové slová: Doprava, preprava, bezpečnosť, ropa a zemný plyn, stratégia,

Transportation

On the first part of the paper, the study analyses the methods of transportations. Prior to analyse the different methods of transportations it is important to point out the general description of transportation structures and the options. In fact there are different transportation options of oil and gas however in this study, we shall focus on four option of transportations. The decision of which method to use, mainly comes down to cost and location. The short locations for transportation are generally working by feeder or distribution pipelines in certain cases trucks. This because in case the country is willing to export oil and gas to the neighborhood countries or the close destinations or border to the neighborhood countries then trucks and the pipelines are considered as proper transportation methods. On the other hand the railways are also considered as one of the method for shorter destinations in order to transport the oil and gas.

The study emphasizes that when land routes are unavailable, tankers are the only option for delivering oil to markets. Indeed, trucks are found less efficient than other methods thus due to the fact of the safety standards and the truck way issues. However their particular advantage is that they provide direct travel from source to the destination. The pipelines and tankers are benefited from the direct transportations in comparison to the railway cars it must be detached and processed at stations. The railway cars require jumping through multiple routes which makes the process complex from administrative standpoint.

In the near future, it can be expected that these transportation methods will continue to be used, unless a radically new method of transportation is found. Therefore, most of the technology development in oil transportation methods is aimed at reducing emissions, increasing efficiency, or preventing spills and leaks.

Vital issues that oil transportation and capacity techniques confront are spills and incidental emanations. Spills from tankers can contaminate beach front situations, while spills from rails and pipelines can dirty natural life living spaces or populated territories relying upon the area. Spills or gas spills from capacity tanks have

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the equivalent unsafe impacts. Pipelines have all the more as of late drawn a lot of open concern. Proposed pipeline ventures, for example, the Keystone XL, have been the point of convergence of preservationists due to their potential natural effects and as an image of societies proceeded with interest in carbon-escalated energy framework.

Methods of Oil & Gas Transportation

The description of transportation structures and the options as described above, four main methods shall be discussed in this study. In fact there are different methods can be included however those four options are considered as current mostly used and important way of transporting the oil and gas.

Pipelines

In spite of the fact that an exceptionally disputable theme as of the recent years, pipelines are our super parkways of oil transportation. They are hailed by numerous individuals as the fastest and most effective approach to transport soil to the edges of the Earth. With new innovation that has developed in the method for automations and sensors, pipelines can be observed each second of the day, anticipating and notwithstanding preventing breaks and pipeline erupts from occurring. In the event that you take a gander at the guide on the right (source: American Geosciences Institute), you'll perceive the amount Houston alone depends on oil pipeline framework. Pipeline transport is the long -remove transportation of a fluid or gas through an arrangement of channels a pipeline regularly to a market region for utilization. The most recent information from 2014 gives a sum of somewhat under 2,175,000 miles (3,500,000 km) of pipeline in 120 nations of the world (Fig. 2). The United States had 65 %, Russia had 8 %, and Canada had 3 %, in this way 75 % of all pipeline were in these three nations.

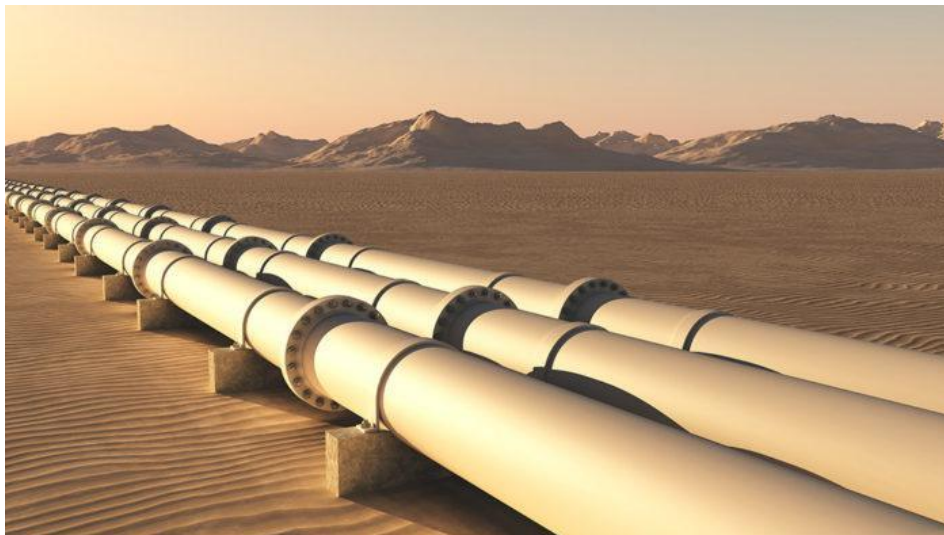


Fig. 1. Pipeline in African Sahara.

The study relies on the Pipeline and Gas Journal's worldwide survey figures which indicate that 118,623 miles (190,905 km) of pipelines are planned and under construction. Of these, 88,976 miles (143,193 km) represented in the planning and design phase projects; 29,647 miles (47,712 km) reflect pipelines in various stages of construction. Through the pipeline transportation the liquids and gases can be transported as well any chemically stable substance also can be sent via a pipeline. Pipelines exist for the vehicle of unrefined and refined oil, powers –, for example, oil, petroleum gas and biofuels – and different liquids including sewage, slurry, water, brew, heated water or steam for shorter separations. Pipelines are helpful for transporting water for drinking or water system over long separations when it needs to move over slopes, or where trenches or channels are poor decisions because of contemplations of vanishing, contamination, or natural effect.

Oil pipelines are produced using steel or plastic tubes which are typically covered. The oil is travelled through the pipelines by direct stations along the pipeline. Flammable gas (and comparative vaporous energizes) are gently pressurized into fluids known as Natural Gas Liquids (NGLs). Flammable gas pipelines are developed of carbon steel. Hydrogen pipeline transport is the transportation of hydrogen through a pipe. Pipelines passing on combustible or unstable material, for example, flammable gas or oil, present uncommon wellbeing concerns and there have been different mischances. Pipelines can be the objective of robbery, vandalism, disrupt, or even psychological oppressor assaults. In war, pipelines are frequently the objective of military assaults.

Rail Transport

The study examines the rail transportation as the second important methods for the transportation of oil and gas. The paper analyses that the rail transport can be even considered very safe way of transportation in comparison to the trucks. Since the railways are moving in one line while on ride. Therefore this method has been very popular choice for crude oil transportation more than 150 years. The paper mentions that it can be implausible to have the oil and gas industry without the existence of the railroad industry. In fact, the Railroad Commission of Texas started as a railroad regulatory agency and eventually began regulating the oil and gas industry. The commission only focused on the energy sector and do not regulate anything railroad related. To transport oil on rail, there is next to no new development that necessity to occur as railways are as of now set up. This is a major preferred standpoint over pipelines as they cost millions to outline and build. Transporting oil via prepare is additionally genuinely speedy and proficient and on account of innovation, the measure of oil trains can convey has expanded as of late. And keeping in mind that trains endure a considerable amount of mishaps that reason oil releases, the aggregate volume lost amid a normal spill is not as much as happens with other transportation strategies.

One of the examples can be noticed in the study is the Tank Cars which is considered as another way to move crude oil across a landmass. The procedure follows as the oil is being loaded into the tank cars and are moved by a diesel train across the rails to the refinery or the given destinations. In fact, trains are in the capacity of caring a huge amount of oil by using multiple tank cars (Fig. 2).



Fig. 2. *Tank Cars transported by train.*

Despite the fact that each rail auto holds much less oil than an expansive marine tanker vessel, when various are utilized a considerable measure of oil can be transported. For instance, the DOT-111 tank auto is an extremely basic tank auto and can hold 34,500 US gallons (820 bbl; 131 m³). In the event that ten tank autos were pulled to prepare would convey 345,000 US gallons (8,200 bbl; 1,310 m³) of oil, so the measure of volume increments quickly. The train used to pull these rail autos have an enormous measure of drive and can be snared with different trains to expand the power, making the rail auto a reasonably financially savvy approach to move this oil. These rail autos, much the same as the pipelines, can be utilized to convey a refined fuel rather than unrefined petroleum from a refinery to a dispersing plant. Rail autos are a typical method to move this fuel a long separation to territories where they don't have pipelines set up.

Trucks

The third method of the transportation methods are explained as Trucks in this study. While trains are constrained where they can travel, trucks are allowed to go anyplace the street will take them. This is one motivation behind why trucks are a mainstream technique to transport oil and oil items. Another reason trucks are a famous technique for transportation is on the grounds that the foundation is now set up, there is no compelling reason to manufacture streets as they are as of now built. Trucks convey substantially littler volumes of oil, so when there is an accident or a break, it has a tendency to be less hard to tidy up. Additionally, truck mishances more often than not occur far from waterways. Tank trucks are utilized more like rail autos are, yet they will more often than not transport refined fuel to a fuel station, similar to a corner store. Trucks are generally used to convey littler limits of oil short separations. Like rail autos, these trucks can convey a few

distinct types of this oil, however they don't generally convey the oil in its raw petroleum shape since it would take a great deal of trucks to convey the volume of rough that the refineries request. These trucks can convey this fuel to service stations, or convey the fuel directly to the consumer. These trucks are utilized in circumstances where it is irrational to utilize rail autos, pipelines and tanker ships. Spots like corner stores; that are not ready to be gotten to by marine vessels, and don't request the volume that is conveyed by pipelines or trains, would get their fuel from tanker trucks. This permits a reasonable and financially savvy approach to convey the fuel to the shoppers through the corner store. Basic sizes go from 400 up to 7,500 US gallons (Fig. 3).



Fig. 3. Oil truck.

Oil Tankers

The last method is taken as Oil Tankers as one of the best ways to transport extremely large quantities of oil. Due to the fact that, the tankers can travel the oceans and vast waterways of the world with millions of gallons of oil and liquefied natural gas therefore those tankers are carrying the lifeblood of every business and economy in their cargo and various ports across the world cater to these giant ships (Fig. 4).



Fig. 4. Oil Tanker.

According to the Port of Corpus Christi:

“The first crude oil shipment exported from the United States in 40 years has sailed from Corpus Christi, Texas. NuStar Energy and ConocoPhillips loaded a vessel at NuStar’s North Beach Terminal at Port Corpus Christi. The light crude oil sold to the international trading company Vitol, left the dock at Port Corpus Christi on December 31, 2015.”

Conclusion

The study concludes the abovementioned discussion by focusing on the relevant factors. One of the analysis have not be quite defined is the term of transit. It can be concluded in this part that the transit is also a significant issue for the transportation of the oil and gas. Therefore in order to attain the transportation successfully there are different requirements to be fulfilled and one of them is the transit factor. It is obvious that at the process of transportation the pipelines, tankers, railways or the trucks are passing through different regions and in order to be able to do that the countries are having a bilateral or sometimes multilateral agreements depending on the number of the contracting countries. Transit oil and gas pipelines are developing in importance, and face various topical issues. One of such issues is the issue of potential interruption from various sources, prominently post-development conduct of the transit country. Present and future pipelines confront the danger of consistent clash over legitimate, financial and political issues. Once the pipeline is fabricated and in activity, the danger of interruption of the pipeline by the travel nation over questioned travel terms exists. This is because of two key issues: initial, a move in dealing forces to the travel nation upon development and task of the pipeline and, second, changes in the estimation of the throughput suggest value changes that can influence the conduct of the transit country.

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