To Study Offshore Satellite Broadband & VSAT Remote Communication for Oil Rig

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Abstract— This paper summary whole research aimed to study "Offshore satellite broadband and VSAT remote communication for oil rig". Our objective is to provide communication link between base station and offshore platforms of oil rigs. Internet, data, voice are services provided through this communication link. Telecommunication links between an offshore platform and shore facility are crucial and essential for platform operations and must be designed and selected carefully. one of the most valuable capabilities that satellite can and has delivered to the oil industry is a constant information flow to and from the oil rig. Satellite communication is wireless ,can cover the regions where fiber optics infrastructure is not possible. very small aperture terminal is used to transmit broadband data(for the provison of satellite internet access ,voip).We will try to establish a communication link between the base station and offshore platform using KA band satellite for transmission purpose and KU-band satellite for reception purpose whose bandwidth is larger than C-band and it can transmit data and voice in a well-focused manner because of very small wavelength. KA band is well suited to utilize small spot beams that allow for frequency reuse.

Key words: Offshore Satellite Broadband, VSAT Remote Communication, Oil Rig

I. INTRODUCTION

Oil and Rig companies need way to establish private VSAT networks with high bandwidth speed for critical communication. With the demands of on-the-move mobile maritime connectivity increasing, VSAT systems are perfect for transmitting voice, broadband data, or video conferencing from offshore oil and gas drilling rigs. Offshore platforms, whether for coastal defence systems, environmental monitoring, pipe line operations, or oil and gas production, represent a significant construction effort and investment. Telecommunication links between an offshore platform and a shore facility are crucial and essential for platform operations and must be designed and selected carefully. Typically most offshore platforms are in a relatively fixed location for long periods, and telecommunication links may be planned and implemented in a conventional manner. The information in this document is designed to assist a platform owner or operator in choosing and specifying a communication link for an offshore platform.

II. PROPOSED SYSTEM

There is physical media between oil rig earth base station and BSNL earth base station. The physical media can be a fibre optic cable. The information to be transferred is in analog form. The signal is uplink from earth station to satellite and from satellite it is downlink towards receiver base station

A. *Block Diagram*

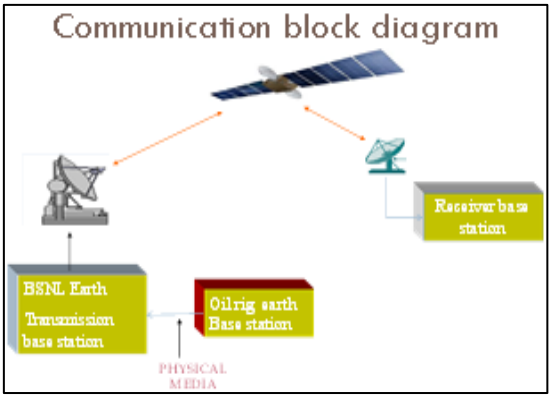

Fig. 1: Main Communication Diagram

In this project we use the IPSTAR vsat system with the help of BSNL officer using there component and system, the above block diagram shows the communication between user terminal to terristrial network.

III. CONNECTION ESTABLISHMENT

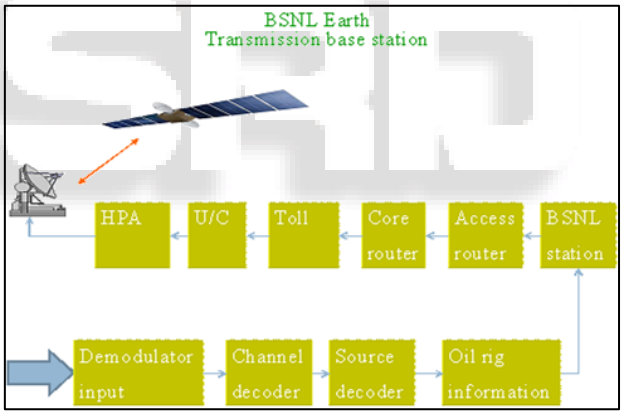

Fig. 2: Transmission Side Block Diagram

The oil information is transferred from oil rig base station to BSNL earth base station through physical media. From BSNL station it is passed to access (7613) router, core (4603) router. Signal is received at TOLL, TOLLconsists of three sub block: FLP (Forward Link Processor), TI (Transmit Interface), Tx(TOLL Transmitter).FLP converts protocol and form packets. In TI it is converted to frames and forwarded toward Tx. Tx decides coding, multiplexing and giving IF output (140 MHZ). This signal is up converted to 8 GHz and amplified using HPA (High power amplifier) so that the signal can travel the distance between the antenna and satellite of 36,000 km without any intervention.

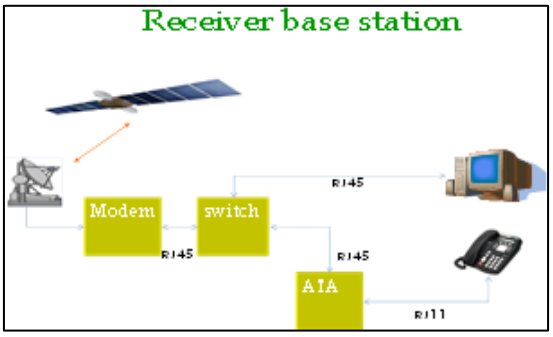

Fig. 3: Reciver Base Station Block Diagram

Signal is received at receiver base station from satellite .This signal is demodulated, Down converted upto 140 MHz the noise added in the signal while travelling through the air is Reduced with the help of LNA (Low Noise Amplifier) and transferred to switch using RJ45 connector, This signal is spitted in data and voice signals in switch. For internet access (Data), we use PC using RJ45 connector. For voice calling the signal is transmitted to ATA using RJ45 connector .The ATA (Analog Telephone Adaptor) will connect the Telephone Receiver using RJ11 connector.

A. Simulation Result

In this project the simulation results process by cisco packet tracer software for Achive the Fathful packet Transmisation

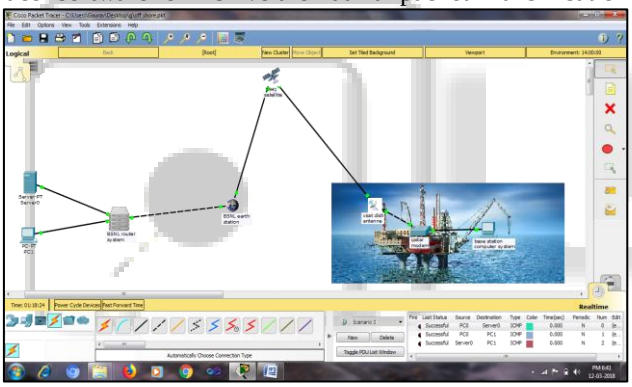

Fig. 4: Simulation Result

In above simulation are shows the connection of different system

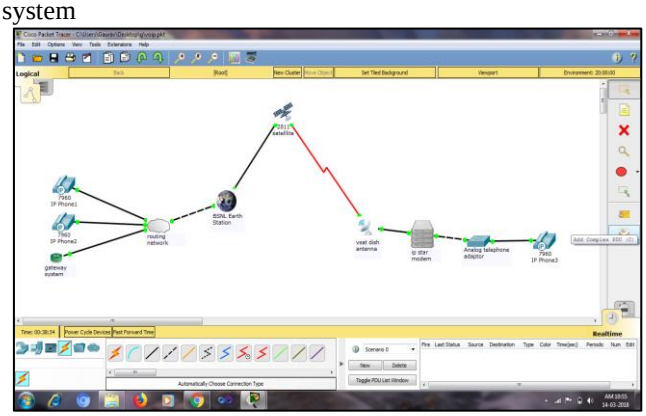

Fig. 5: Simulation Result

IV. CONCLUSION

VSAT technology is the cost effective solution & key Factor to Oil and Gas operations. IPSTAR is a very fast growing technology. VSAT industry shall continue investing in Oil & Gas Industry and improve the technology in order.

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