

# Newsletter

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## OTBL Ahmedabad PDB Jobs Special

OTBL has carried out Paraffin Degrading Bacterial (PDB) Jobs in 50 wells of ONGC Ahmedabad Asset successfully as on 31<sup>st</sup> Dec.2015.



Few Pictures from the site

### **Introduction:**

1. Conventional technique to remove and control paraffin deposition in the oil tubing is mechanical scraping, hot oil/hot water circulation or application of solvent. Sometimes scraper gets stuck inside the tubing, which is difficult to retrieve causing damage to the well necessitating work over jobs. Hot oil, steam, chemical and solvents used to dissolve the paraffin deposition are also expensive as well as environmental and fire hazard. Even sometimes pipelines get ruptured due to pressure build up during the intervention.
2. Cleaning and prevention of paraffin deposition in oil well tubing by using microbes offers a cost effective approach. Paraffin degrading bacterial strains(s) are developed for degradation of paraffin deposition inside the oil well tubing surface.
3. PDB jobs are mainly carried out in self-flow or gas lift wells in paraffin deposition prone wells for eliminating regular scraping. The solvent application during PDB jobs also clean the near well bore and leads to oil gain. Apart from these wells, PDB jobs are also effective in SRP wells which have high tendency of rod stuck up/rod failures and require frequent HOC/EC treatment.

## Screening of wells for PDB

1. Considering the growth limiting temperature of the PDS-10 bacteria and necessity of aqueous phase for their growth, reservoirs having temperature less than 90° C is considered as optimum criteria. The wells have been selected from oil fields of different geographical areas of Ahmedabad Asset. Pre job parameters such as liquid rate, % WC, frequency of Scraping/HOC/EC and other control measures, oil properties etc. were recorded and compared with the post job parameters.
2. The criteria adopted for identification of candidate wells was based on the reservoir characteristic as Well as the production data of the well. The parameters screened for the purpose include:
  - High frequency of scraping / hot oil circulation / solvent jobs.
  - Bottom hole temperature (<90°)
  - Minimum 6 % water cut
  - Adequate reservoir pressure
  - Good injectivity
  - Preferably producing on Gas lift mode. However, wells on SRP mode have also been considered and taken up for PDB jobs.
3. A contract of 50 PDB jobs in all the areas of the Asset was awarded to M/s. OTBL. The first job was undertaken on 07.01.2014 and the 50th job was carried on 31.12.2015. The candidate wells for PDB jobs were identified by SAM's in consultation with IM's. The job plans were made by M/s OTBL and all jobs were co-ordinated and supervised by ST-Chemistry. Pre job and post job oil production data has been taken from the monthly production reports and the scraping/HOC/EC data has been collected from the respective installations.

## PDB job design:

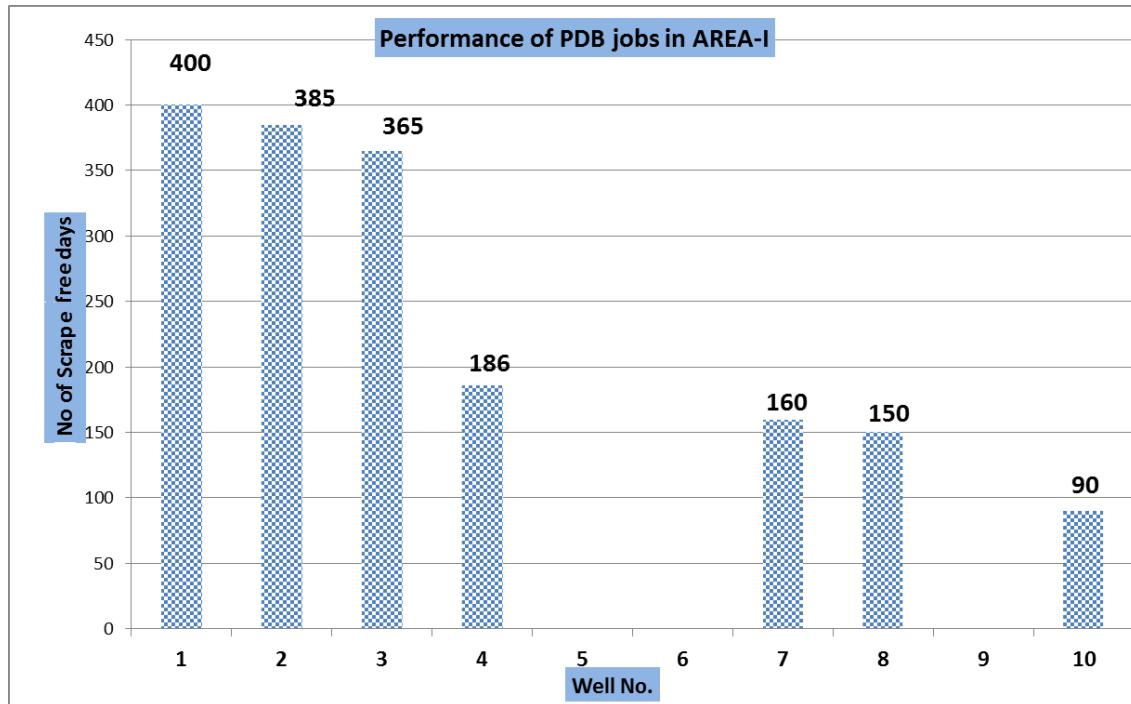
### **DAY-1**

Preparation of the well which involves mechanical scraping, Hot oil circulation (HOC), Placement of solvent in tubing, solvent squeeze in the formation and flushing the surface flow line from well to the GGS and overnight soaking.

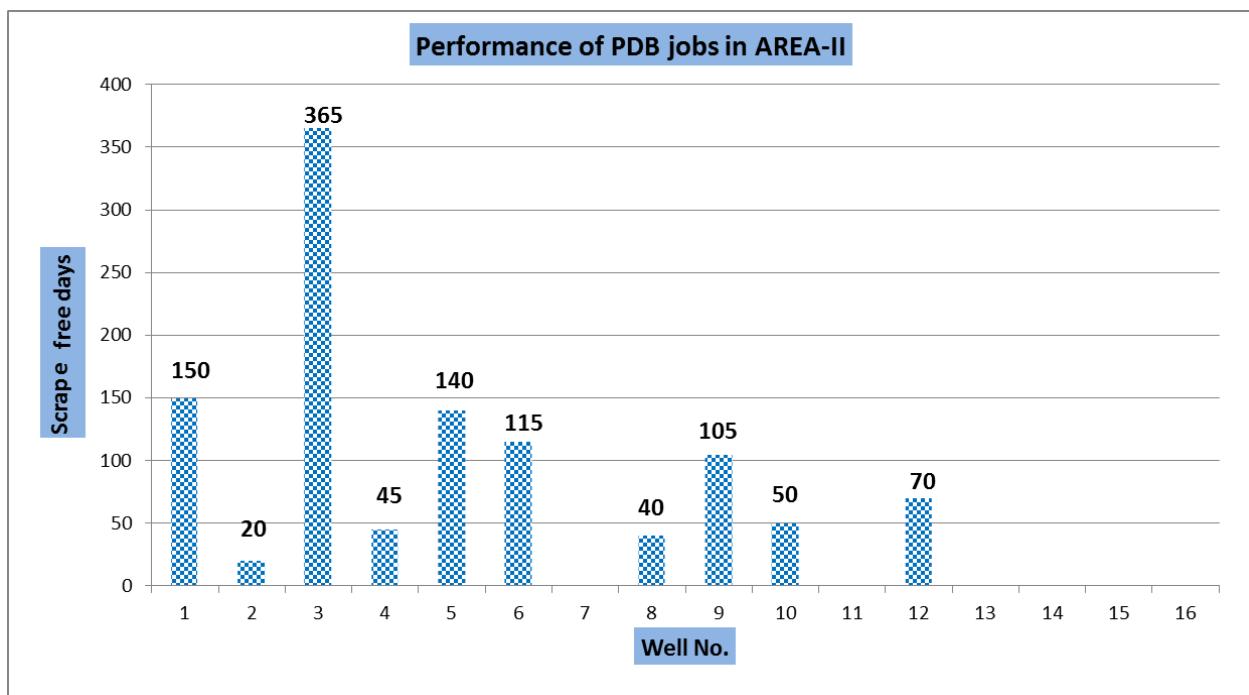
### **DAY-2**

- Squeezing of pre flush nutrient solution in the formation.
- Squeezing of biological slurry in the formation.
- Placement of biological slurry in the tubing.
- Closing the well for 5 days.
- On opening of wells after five days, water samples of each well were collected and analysed by M/s. OTBL for microbiological analysis.

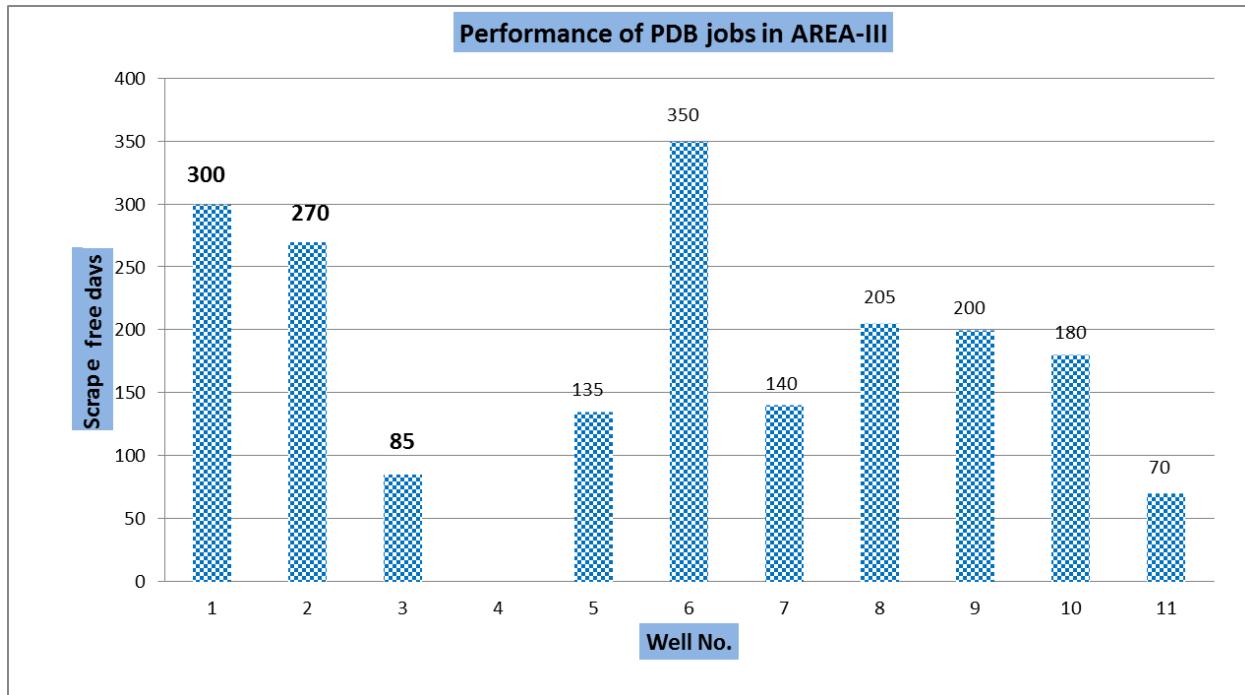
### Results of PDB job: Area-I



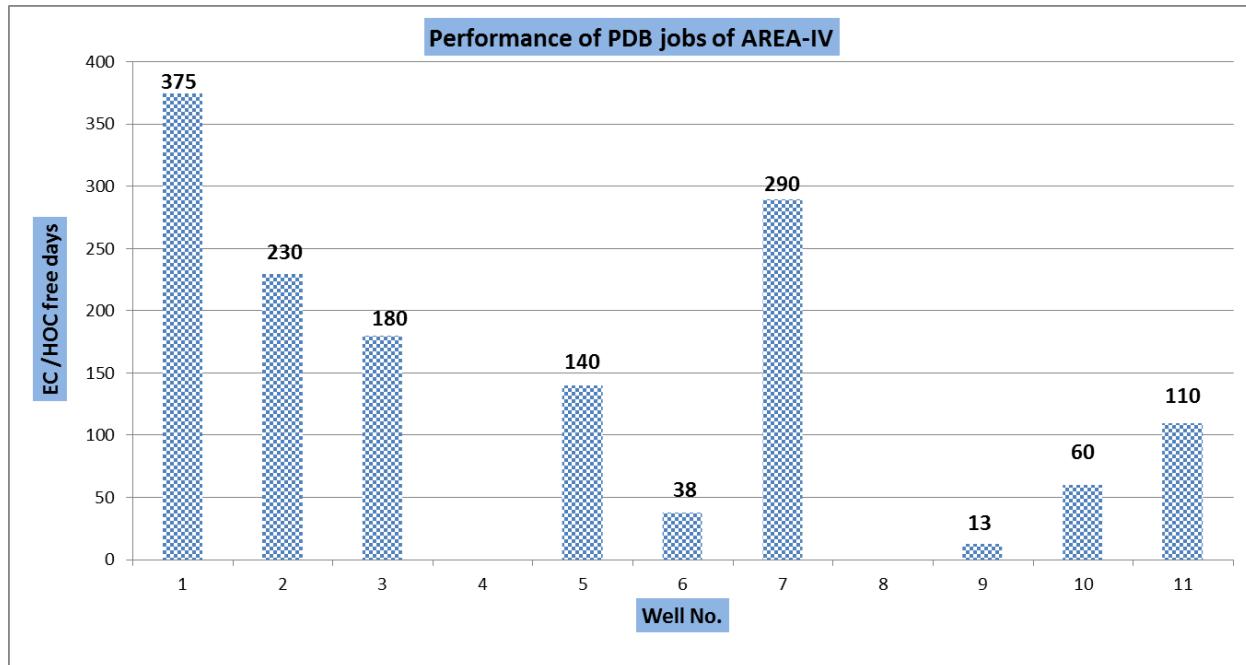
### Results of PDB job: Area-II



### Results of PDB job: Area-III



### Results of PDB job: Area-IV



## Conclusion

1. In general wells with scrape free days greater than 3 months i.e. 90 days has been considered as successful whereas wells with less than 90 scrape free days have been considered to be unsuccessful for GL/SF wells. Overall PDB success rate for GL-SF wells is about 77%.
2. Average scrape free days in GL/SF wells has been observed to be about 226 days.
3. In SRP wells, frequency of HOC/EC job has reduced in most of the wells as against an average frequency of one and half months before the PDB job. After the jobs, the average HOC/EC free days is about 200 days.
4. Here too, taking into consideration HOC/EC free days greater than 90 days as successful, success rate of PDB jobs in SRP wells is around 71 %.
5. Decrease in production was observed in some of the wells where PDB job has been carried out. Since in principle there is no such operation in execution of PDB jobs which may lead to decrease in production, this decrease seems to be reservoir phenomenon of that particular sand.

**PDB jobs in 50 wells** resulted in oil gain of  $3642\text{M}^3$  so far from 43 wells. 7 wells in which jobs were carried out in Nov.Dec.15 are still under monitoring. 2 PDB jobs of separate contract carried out in October-14 also resulted in additional oil gain of  $548\text{M}^3$ .

1. So total oil gain from 50 + 02 jobs is  $4190\text{M}^3$  so far.
2. After the jobs, the average HOC/EC free days in these wells is about 200 days.



**PDB Job Pictures from the site**

## OTBL On-Going CSR Gujarat Project Details

### Protectors of the Environment (Phase III)

~ Commitment of the Students to Conserve Energy ~

Protectors of the Environment (PoE) III, the flagship programme of ONGC TERI Biotech Limited, based on the theme 'Conservation of Energy Resources' has been launched in the three districts of Gujarat – Ahmedabad, Mehsana and Bharuch. Schools from all 3 districts were invited to participate in this programme which included both Govt. and private schools. A total of 18 schools was shortlisted to participate in this programme (6 schools in each district). To train the children on conserving energy, an interactive book titled 'Save Energy to Save Future' is compiled for all the participating children. The book includes do-it-yourself activities to engage the children and deepen their understanding through activities such as, 'Energy Audit' of their own homes and 'Being a green architect' by designing an energy-efficient room through this book. The children will be evaluated on their level of understanding. The programme is currently in its second stage with the on-going introductory workshops. Around 3000 students are participating in this programme and are committed to spread the message of energy conservation.



An interactive book titled 'Save Energy to Save Future'

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### OTBL Completed CSR Assam Project Details

**'Bio digester Toilets for improved sanitation facilities in schools in Nazira Block, Sivasagar district, Assam'**

OTBL Assam CSR Project '**Bio digester Toilets for improved sanitation facilities in schools in Nazira Block, Sivasagar district, Assam**' where physical work has been completed, only the final report has to be submitted.

#### **Details of Project are as follows:**

Environmental sustainability speaks about safe water supply and sanitation in order to reduce the incidence of diarrhoeal illness and maintenance of healthy environment. One way of achieving this is by providing schools with safe drinking water, improved sanitation facilities and hygiene education which encourages the development of healthy behaviour in the student's life. Children have a right to the basic facilities such as school toilets, safe drinking water, clean surroundings and basic information on hygiene. Providing water, sanitation and hygiene in schools create an enabling environment which secures children's dignity, safety, health and attendance in classes. Children are more receptive, quick learner and quick to adopt and sustain changes which become agents of change in their families and societies.

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A school child educated about the importance and benefits of sanitation and good hygiene behavior is a channel for carrying these messages far beyond the four walls of the schools, bringing lasting improvement to community hygienic practices.

As a **part of the initiative of Swachh Bharat Mission**, under CSR activities of ONGC TERI Biotech Limited (OTBL), construction of toilets in schools was initiated by TERI in 10 schools at Nazira Block, Sivasagar district of Assam. Bio toilet is a system which decomposes human excretory waste in the tank using specific bacteria further converting it into methane gas and water.

The bio-digester toilets have been developed in schools with the aim of maintaining hygiene at the school compound. Apart from construction of toilets in schools, the project has also been undertaken with the specific objectives to sensitize and create awareness on the importance of clean and sanitized environment in the school campuses, to promote behavioral change among the school children for good hygiene, to disseminate knowledge on Biotoilets and their uses, operation and maintenance for the sustainability. With these objectives 10 Bio-toilet units having separate toilets for boys and girls with urinal have been constructed in 10 schools. It has also helped to enhance OTBL's visibility in the region by providing necessary branding platforms and promoting its CSR vision. Initially schools were selected based on the feasibility study conducted in 15 schools for the construction of the toilets in schools at Nazira block, Sivasagar district, Assam under the CSR initiative of OTBL. Design of the Biotoilets was prepared and accordingly construction works have been completed.

### **Importance of focus on schools**

After the family, schools are the most important places of learning for children. Schools are stimulating learning environment for children and it stimulates or initiates change. Availability of sanitary facilities in schools can act as a model and teachers can function as role models.

Schools can also influence communities through some outreach activities, as, a large proportion of people in a community are generally in touch with the schools through their students by various ways. Therefore, schools were selected to implement this project considering the importance of sanitation in schools and it's far reaching impact on the community.

### **Important to focus on children**

Various surveys conducted in the past among the school children in India revealed that about half of the ailments found are related to unsanitary conditions and lack of personal hygiene. Such survey results show the need for a focus on school children. Also, it is generally recognized that childhood is the best time for one to learn the practice of hygiene, cleanliness, sanitization etc. These learnings have important roles in the household and the society and if children are brought into the development process as an active participant, they can become change agents within their families and in the society.

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## **Construction of toilets in schools**

Constructions of toilet units in schools have been completed with separate toilets for boys and girls with urinal facility with an aim of maintaining hygiene in the school premises and to create awareness among school children about the importance of cleanliness, hygiene, sanitization etc. The process would also inculcate the habit of maintaining the toilets in a better way, which is perhaps the most neglected issue for years.



## **Few Pictures of Toilets Constructed in Schools**

### **Sensitization and awareness generation programmes in school**

Ownership issues, lack of motivation, lack of maintenance of toilets are the reasons for non-functioning of toilets in schools and hence dissemination of information was considered as an important aspect of the programme. Therefore, sensitization and awareness programmes on operation and maintenance of toilets and do's and don'ts while using toilets have been organized in the schools. Apart from this, other sanitation and health related issues have also been discussed during the programme.

The students have been advised to use water properly in the toilet after using and not to throw plastics, Wrappers or other materials that would affect the bio-digestion process. Some of the important issues such as importance of sanitation in our life, source of bacterial infection and their impact on health, cleanliness, as well as Water, Sanitation and Hygiene (Wash) issues and its impact on health of the student and the society, methods and importance of washing hand, diarrheal disease and preparation of Oral Rehydration Solution (ORS) at household level in emergency have also been discussed.

Total 815 students from class VI to XII and 70 teachers participated in the programmes. Along with the awareness generation programme student's knowledge and perception on Health, Hygiene and Sanitation have also been tested through different competitions, quiz and discussion forum.

#### **Photos of awareness generation programme in schools**



#### **Workshops in schools on Hygiene (Wash)**

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### **OTBL's ESTEEMED CLIENTELE**

- ◆ ONGC
- ◆ Oil India Ltd
- ◆ Numaligarh Refinery & Petrochemicals Ltd
- ◆ Reliance Industries Ltd
- ◆ BG Exploration & Production India Ltd
- ◆ Masila Petroleum Exploration –Yemen
- ◆ Jindal Petroleum- Georgia
- ◆ HPCL, India
- ◆ BPCL Mumbai
- ◆ SB Industrial Engineering
- ◆ BCPL

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