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Evaluating the Technologies To Ensure Produced Water From Trinidad Land Operations Conform To Specification Before Discharge into the Environment

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Abstract

The National Oil Company of Trinidad, which has operations throughout the south of the island, currently produces 35,000 barrels of water per day (bwpd). While every effort is being made to ensure conformity before discharge, there are twenty-eight (28) parameters which have to be addressed immediately. The new legislation in the country requires all companies conform to the specification laid down by the Environmental Management Authority (EMA). Conventional primary and secondary technologies currently in use, do not allow us the capability to address these parameters. An evaluation was carried out on two types of technology namely the membrane filtration/reverse osmosis, and the electro coagulation/variable vacuum distillation. The introduction of either technology can assist companies with oil field operations on land in Trinidad to conform to the required specification. If the use of the technology is costly, then arrangement can be derived from a service company to provide the facility and seek alternate arrangement as to recover the cost of the operation.

Introduction

The Government of the Republic of Trinidad and Tobago (GORTT) passed the Environmental Management Act in 2000 with emphasis on Noise Pollution, Environmental Clearance and most recently Water Pollution. Briefly, any operation in which the decibel level is above eighty (80) decibels have to register with the Environmental Management Authority (EMA); any operation which will impact on the environment have to apply for a Certificate of Environmental Clearance (CEC) to continue their operation. In so doing they may be required to produce an Environmental Impact Assessment (EIA) before the CEC can be granted.

The Water Pollution Rules 2001 comprises two schedules namely: the presentation of a list of twenty-eight (28) water pollutants to the aquatic environment. All industries operating in the country cannot dispose of their effluent namely produced water into the environment. As a result for the operations to continue uninterrupted, the twenty-eight (28) parameters listed in Table 1 have to address. Based on the second schedule maximum permissible limits are stipulated as they pertain to the following categories inland, near shore (approximately 3 miles from shore), offshore and ecosensitive areas. Permit to discharge is a requirement and continuous monitoring by the regulatory agency is necessary. While there are specific water pollutants to specific industries, this legislation hopes to capture all in the shortest timeframe. Severe penalties are enforced, and continued discharge into the environment can see top level management in these companies facing time in jail.

The Environmental Management Authority has spelled out what are required by this Water Pollution Rules 2001. They are as follow:

- ~ Despite the operating industry, all twenty-eight (28) parameters have to be addressed.
- ~ All twenty-eight (28) parameters are equally weighted.
- ~ While a time frame will be issued for compliance, no compromise will be acceptable.
- ~ No waiver will be granted for discharge into environmentally sensitive areas.
- ~ Compliance measurements will be at the end point discharge and not in the mixing zone.
- ~ A Certificate of Environmental Clearance will be needed for discharge into the near shore area.
- ~ Disposing models and environmental impacts will be monitored.