

## **Case Study 7A - Effect of Sand Jetting**

### **Background**

Jorin's client was concerned by the effect of sand jetting in their MP separator on the produced water quality. The client requested monitoring of a sand jetting exercise to allow them to make an informed decision with regards to the frequency that operations should be conducted.

### **Aim**

The aim of this study was to assess the effect of sand jetting in the customers MP separator on the oil in water concentration exiting the plant.

### **Results**

The site data was primarily collected using Jorin's mobile ViPA technology which is designed and constructed to operate in hazardous environments.

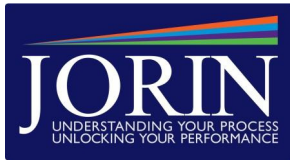
Results for the oil concentration are shown in graphic format in Figure 1. A scheduled sand jetting took place in the MP separator just after 09:30. The ViPA was connected to a sample point on the overboard discharge line, to record the effects on the process and discharge quality of the produced water.

Figure 1 shows that the oil in water separation process train was operating in a stable manner prior to commencement of the sand jetting. Almost immediately after the start of the sand jetting operation, the oil concentration was seen to rise dramatically, peaking at 109 ppm, before returning to the previous stable levels. The sand jetting pump ran for 30 minutes; however the process upset caused by sand jetting was observed to continue for a period of approximately 1 hour.

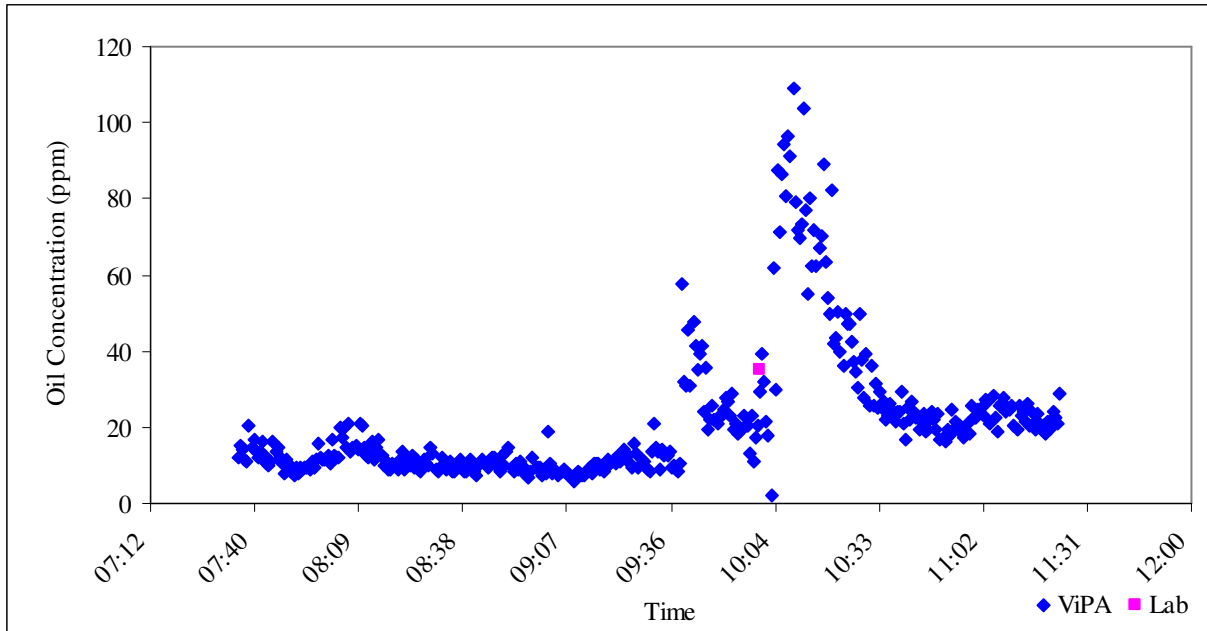
The solid particle concentration data is presented in Figure 2. As with the oil, the solids levels were stable prior to sand jetting; virtually as soon as the pump started, the concentration of solids was seen to dramatically rise, peaking at 2670 ppm.

### **Conclusions**

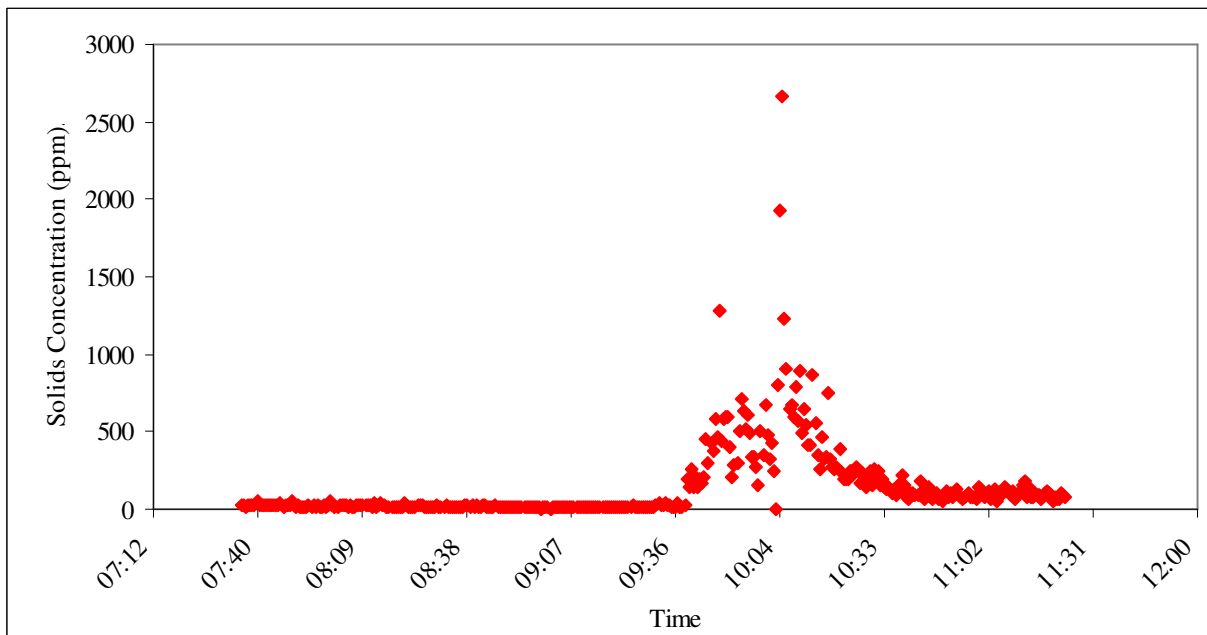
The sand jetting operation dramatically increases both oil and solids concentration going overboard both during and immediately after the sand jetting operation. During the sand jetting operation there are high levels of oil in the discharge water and this can be directly correlated to the increase in solids passing through the process. Further work could be conducted to determine the optimum balance between sand jetting frequency and the extent of the consequential process upsets.



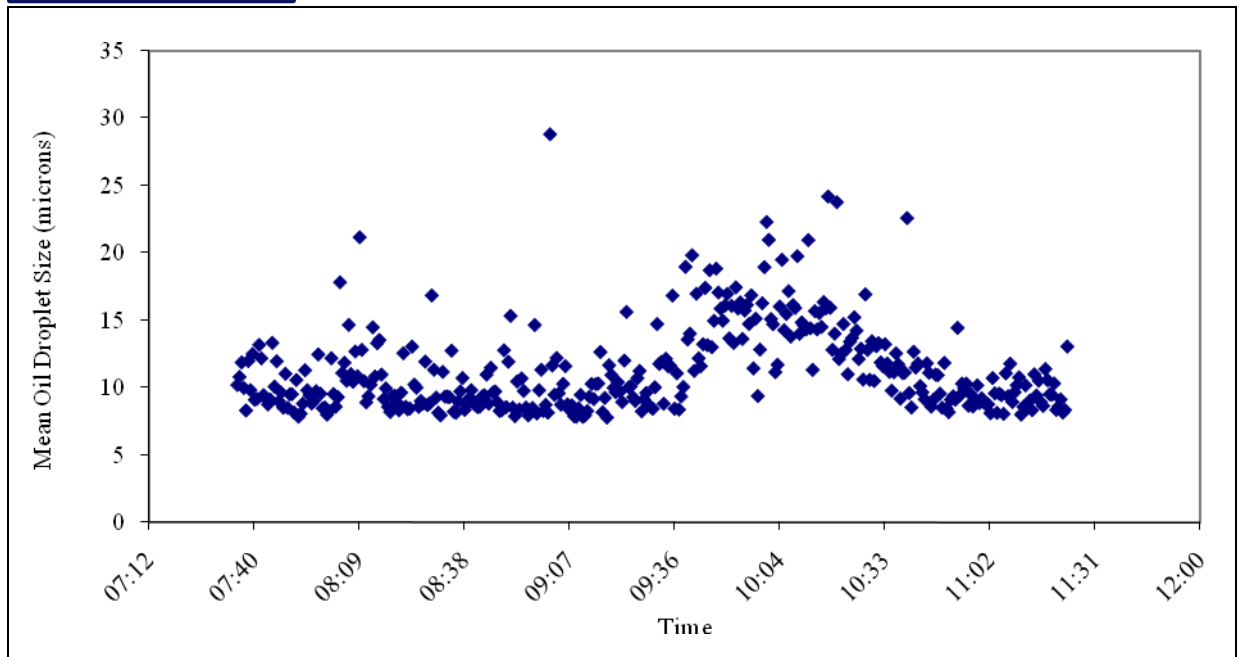
These results clearly show the benefit of installed ViPA technology for the monitoring and management of the sand jetting regime, providing necessary process data that could lead to increased performance, indicating the extent and duration of process upsets and using the trend analysis function providing prior warning of discharge limits being approached.



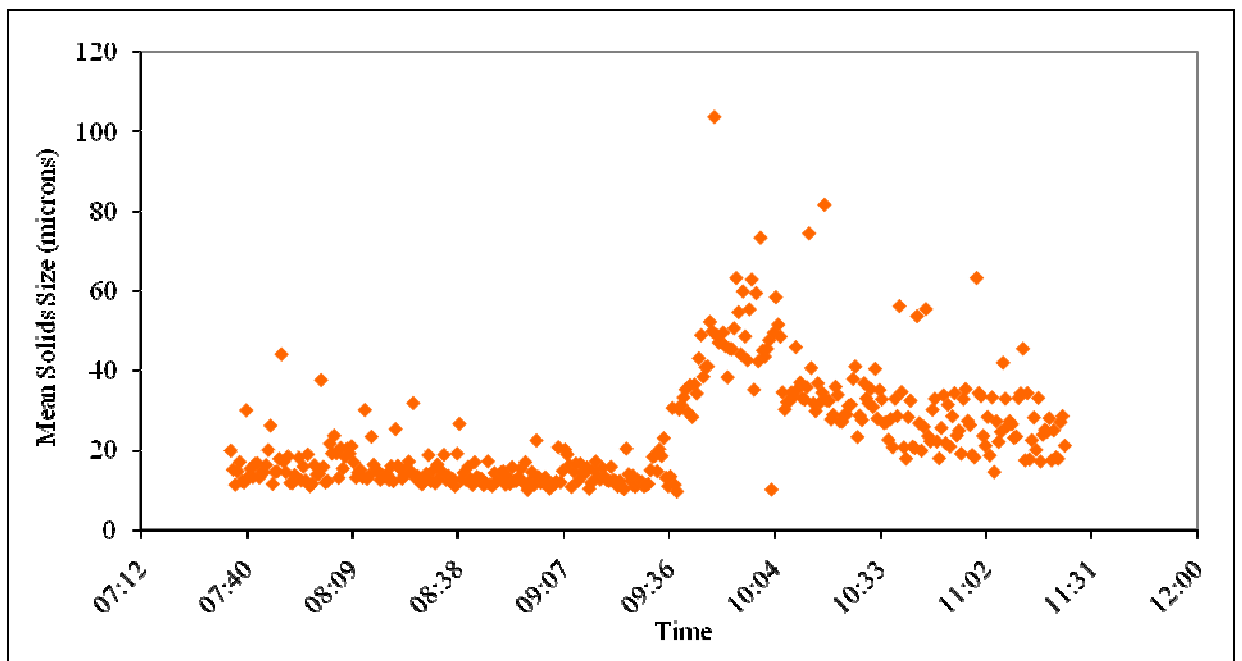
**Figure 1: Oil concentrations for the overboard discharge whilst sand jetting**



**Figure 2: Solids concentration for the overboard discharge whilst sand jetting**



**Figure 3: Oil droplet size for the overboard discharge whilst sand jetting**



**Figure 4: Solids particle size for the overboard discharge whilst sand jetting**