

# TALCYON



## FPSO Vessel (Ghana)

### Boiler Tube Inspection

#### OVERVIEW

A 14-year-old FPSO vessel in Ghana experienced the deterioration of their water tube boiler due to the poor performance of its D-shaped tubes. Since the vessel's boiler tubes had never been inspected, they needed a preliminary assessment done to verify the condition of these tubes.

The vessel had 50 personnel onboard and was producing 120,000 barrels per day. A significant leak would have affected the efficiency of the vessel and its production capability.

Since the boiler tubes were D-shaped, Acoustic Pulse Reflectometry (APR) technology was chosen for its advantage to quickly inspect 100% of the tubes in a variety of shapes.

## The Technology

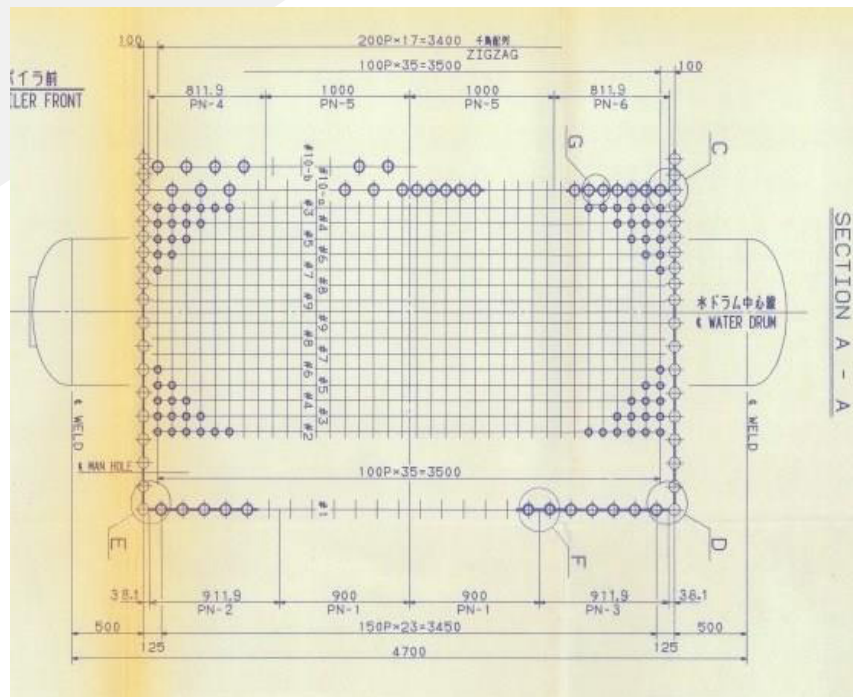
### TUBE SHEET DIAGRAM

Using APR technology, a total of 2,400 boiler tubes were quickly inspected within two 6-hour shifts with an additional day taken to generate the tube analysis report.

Neither elaborate preparation was needed, nor extensive cleaning required to test the boiler tubes.

With this technology, sound waves were injected into the tubes and their reflections pinpointed the specific type, location and size of inner diameter defects.

Riser tube	: $\phi$ : 50.8mm	T: 4.5mm	L: 8m
Downcomer tube	: $\phi$ : 139.8mm	T: 6.6mm	L: 9.5m



### OUTCOME RESULTS

The objective was to mitigate risk and ensure that the vessel's infrastructure was sound and production was optimal.

- 1 Based on APR signal analysis, **768 tubes** were found to have corrosion between **45% and 60% wall loss** and **192 tubes** had corrosion more than **60% wall loss** of the total tubes inspected.

The former were placed under critical observation while the latter were plugged.

- 2 With APR Technology, **100%** of the tubes were inspected very quickly and accurately. A detailed report was generated shortly thereafter that enabled sound, evidence-based decision-making.