M&A Engineering
machining without boundaries

# CASE STUDY

## PRECISION IN-SITU MACHINING

### REPAIR OF PIN LOCATIONS FOR FORWARD JACK-UP LEGS ON BARGE INVOLVING OPTICAL ALIGNMENT

**When existing locations for locking pins were found to be worn, M & A Engineering Ltd was asked by Northwestern Shiprepairers to assist in the repair of pin locations on the vessel MV Wind, a task that meant cutting out existing plates and welding in new sections at each of three locations, on forward, port and starboard legs.**

The project involved machining the pins in the same plane relative to each other and the design of a system able to accurately carry out the work in-situ.

**"M&A demonstrated its expertise in this area with an innovative solution that solved the problem with high accuracy"**

M & A Engineering were asked to devise a method that ensured that after machining, the horizontal centrelines of the new pins were in the same plane, relative to each other, the Jack-Up leg centreline was perpendicular to the centreline of the pins, and the pin centrelines bisect the leg centreline. After establishing the relative position of each of the new slots, machine each slot to the design tolerance.

M & A replicated the centreline of the Jack-Up leg by setting one of our modular line boring bars to zero-zero readings off the leg location bore. Each horizontal bar centreline was set to bisect the vertical centreline.

**Worn pin and location**

**New plate**

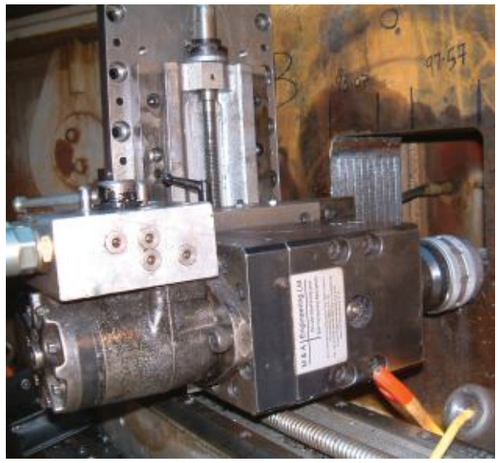
**Bar set to zero-zero in the vertical plane**

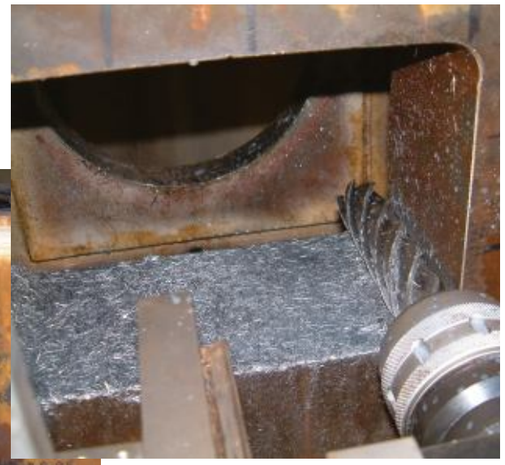
**All centrelines bisect.**

**One of the three horizontal bars set at right angles to the vertical bar, and zero-zero in the rear Ø240mm pin location bore.**

With all four bars set, a sweep arm was connected to the vertical bar. Using a dial test indicator, the high point on each bar could be gauged, which then gave the position of each line of bores, relative to each other.

From the horizontal bars, x & y co-ordinates were taken in relation to the slots. The required metal removal from each face was then calculated to ensure the slot was on the correct centreline and to design tolerance specifications.





**Milling In Progress. Note The Rear Ø240mm Pin Location Bore**

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