Fatal 6 - Inboard slip flange dredge pipe

WHAT HAPPENED

Contractors working on a UK marine aggregate dredger undergoing a dry dock were required to remove all of the sections of the inboard dredge pipe for inspection and renewal. The inboard dredge pipe consists of both horizontal and vertical sections and upon removal of the 45o transitional piece, the vertical section fell downwards a number of inches until the steel supports and rigged chain blocks took the load.

The contractors were working beneath this section of pipe at the time. An assumption was made by the contractors that each individual section of the pipe was physically connected to the next by way of a fixed flange and ultimately connected through the deck penetration, making the vertical section self-supporting. By visually inspecting the pipe sections, this would appear to be the case.

However, the top flange of the upper section of pipe is of a ‘slip flange’ design so as to allow for slight movement in the pipe. Visually it appears the same as the lower flange (Fig.1), but this is for compression of the rubber seal only and is not physically attached to the adjoining pipe section (see Fig.2). The ships plans confirmed this to be the correct design and appropriate application of the pipe section.

Chain blocks were fitted to secure the pipe as per the Risk Assessment and steel supports had been fitted to the upper pipe section. Both of these precautionary measures prevented the vertical pipe sections from falling more than a few inches and prevented contact with the contractors working below.

The work was immediately stopped and 2 additional chain blocks fitted to the pipe, before representatives of the repair yard and the vessel owner were informed.

Root cause analysis

The root cause investigation determined that this incident resulted from a failure to plan the work on the inboard dredge pipe sufficiently and provide a detailed specification of the job to the shipyard. This specification would have included the vessels pipe diagrams which show the design of each section of pipe, including the slip flange section.

Fortunately, additional controls were in place and the pipe was secured meaning that it could not fall more than a few inches before the strops and supporting bar could take the weight. Otherwise, serious injury to the contractors working below would have likely occurred.



Fixed flange



Slip flange – note bolts assumed to be securing sections

LEARNING POINTS / ACTIONS TAKEN

- Similar unsupported pipework should be proactively identified and marked with a suitable warning to help prevent any similar incidents in the future.
- A generic risk assessment should be developed for maintenance of unsupported pipe work.

LOCATION:	**AGGREGATE DREDGER**	**ALERT STATUS:**	**High Potential**
ACTIVITY:	**MAINTENANCE & HOUSEKEEPING**	**DATE ISSUED:**	**30/01/2020 10:35:20**
SUB ACTIVITY:	**N/A**	**INCIDENT No:**	**01547**