

3.8.4. Difficulty of communication—voice distortion of diver under pressure. Additionally there is the possibility that in marginal operating conditions (ie due to adverse weather, or simultaneous operations) pressure to complete a task (felt alike by the diving contractor and the field operator) may have been a contributory factor.

### **Boats and cranes**

3.9. These two categories are taken together because of the common factors apparent in a significant number of accidents. The D/Energy classify as a crane accident an accident to a person on an installation involving a crane no matter what function (drilling, construction, production, etc) is involved, but do not so classify an accident to a person on an attendant vessel.

3.10. Common factors involved in accidents in these two categories arise out of the effect of working in an exposed marine environment. Examples are sudden gusts of wind catching the load, unpredictable motion of the boat relative to the installation and the failure of cables (both mooring ropes and crane cables), bow thrusters and steering gear.

3.11. In the report at Appendix 15 we examine mechanical failure of brakes, clutches, gears and ropes and accidents caused thereby. A conclusion is that cranes for service on land may not be adequate for service on offshore platforms and that much greater demands are made on the skill of the operator. Offshore cranes are much more frequently subjected to shockloading which, in combination with the marine environment causing corrosion fatigue, may explain the high incidence of rope failures. This particular problem has been the subject of intensive study by the authorities, the operators and the crane manufacturers, and certain design features recognised as weaknesses have already been eliminated.

### **General**

3.12. Appendix 15 is a review and analysis of reports on the files of the D/Energy, the Certifying Authorities and the Welding Institute concerning failures and accidents on offshore installations during the period 1974 to September 1979. We consider that much benefit results from such analysis, which is more detailed than that usually undertaken by D/Energy. Important matters revealed by the review include:

- 3.12.1. a need for additional precautions against fires caused by welding sparks;
- 3.12.2. the need for a wider definition of reportable failures and of the information to be reported; particular reference is made, by way of example, to weld failures;
- 3.12.3. the limited powers of D/Energy Inspectors to fund technical investigation of failures;
- 3.12.4. a requirement for research into the safety rating and protection of wire and other ropes in the marine environment;
- 3.12.5. the need for guidance on the design of welded joints.