

Task force offers unplanned disconnect guidelines

AN IADC TASK FORCE that developed recommended prevention measures and emergency response procedures to guide unplanned disconnects in deepwater drilling is an example of how industry and government can work together.

The effort took on special urgency because the **US Minerals Management Service** asked industry to reconvene the IADC Deepwater Well Control Task Force after two unplanned LMRP disconnects occurred within weeks in early 2000. Both were caused by human error.

Morrison Plaisance, Vice President Team Solutions, **Diamond Offshore Drilling Inc**, described the fast track effort in a presentation at the 2000 IADC Annual Meeting in Houston 27-29 Sept.

After an MMS meeting with industry representatives on 15 March 2000, the Task Force was reconvened on 22 March. Task Force meetings were then held 5 April, 26 April, 17 May, and 12 June. On 26 July, the Task Force's recommendations were presented to MMS.

"It was an enormous effort on a very fast track by everyone involved," said Mr Plaisance.

Subcommittee chairmen participating in the effort were Prevention—**David Bruce, Diamond Offshore Inc**; ROV—**Chris Nelson, Newfield Exploration**; Interlock functions—**Mike Rogers, R&B Falcon**; Deadman/autoshear—**Stan Christman, ExxonMobil**; and Acoustics—**Ronnie James and Doug Foster, Diamond Offshore Inc**.

OBJECTIVES

The Task Force's job was to formulate recommendations to government and industry on guidelines dealing with the prevention of inadvertent disconnection of the LMRP and other similar occurrences. The focus was on the primary control system, said Mr Plaisance.

The other objective was to recommend to government and industry guidelines dealing with backup systems to maintain or regain wellbore security. Systems discussed included ROV intervention; acoustic control systems; interlock functions; and deadman systems/autoshear systems.

The Task Force made two key recommendations. It suggested that all practical prevention improvement measures be applied to floating rig operations in the OCS at a "deliberate pace."

And it recommended that one or more of the mitigation system options be applied "as determined most appropriate by the operator and rig contractor for the specific rig and the well characteristics."

Mitigation options included back up for ROV, autoshear, and acoustic systems.

ROV backup systems are applicable to all rigs, provide a higher level of protection and address all LMRP and riser failure scenarios. But the cost can be high for wells that do not already use an ROV and onboard crew, and there is a time delay to close the BOP after an incident.

Backup autoshear systems are applicable to all types of BOP control systems and provide an immediate response to an incident. But they require available control system channels and subsea accumulator capacity on the lower BOP stack. They do not protect against riser failure.

An acoustical backup system does provide an independent system, but the actuation signal may be blocked by well flow, especially at high flow rates.

PREVENTION IMPROVEMENT

The Task Force's work assessed a number of prevention improvement measures, said Mr Plaisance, including:

- Incorporate enable buttons in all control panels to ensure two-handed operation of critical functions;
- Clearly label all the functions on all control panels;
- Color LMRP and wellhead connectors and covers for these functions uniquely;
- Fit the LMRP and well head connector functions with securable protective covers;
- Disarm the function for non-emergency operation of the LMRP or well connectors;
- Disarm function for non-emergency operation of the LMRP or well head connectors for touch screen systems;

- Include electronic systems to provide warning logic that the operator is about to initiate a critical command;

- Equip emergency disconnect system functions with a secured cover and enable button;

- On hydraulic control manifold, provide distinctive "look and feel" and mechanical barriers;

- For hydraulic hose reels, post warning signs to discourage tampering and ensure that hydraulic supply isolation valves are "Off" and "Vented;"

- Add control interlock prevention devices to LMRP to prevent unlatching LMRP without first commanding the closure of the blind shear rams;

- Designate in management systems the individuals authorized to perform critical functions and maintenance;

- Establish minimum requirements for personnel authorized to operate critical BOP equipment;

- Perform maintenance on the control panel only when it is de-energized;

- Generate and use written procedures and checklists for unlatching the LMRP or wellhead connector;

- Note that riser margin may prevent flow of the well due to underbalance if LMRP or wellhead connector is disconnected.

MITIGATION SYSTEMS

The Task Force also assessed mitigation systems. In the case of the ROV backup system, options included providing for ROV intervention on the BOP for blind shear and sealing rams.

Also considered were contractor supply of an ROV hot stab tool that is correct for the ROV intervention panel installed on the rig, and the demonstrated availability of trained ROV crews with hands-on training with stab devices.

Options considered under Mitigation System 2—autoshear and deadman backup systems—included installing an autoshear device to secure the well following an unplanned LMRP disconnect and installing a deadman system to secure the well following riser failure. ■