

inadvertent operation or malfunction of the blind-shear rams in the proposed rule. We know industry has many years of experience with having blind-shear rams in subsea BOP stacks and that industry has developed safeguards and procedures to prevent the inadvertent operation of this equipment. Also, several operators have many years of experience of having blind-shear rams in surface BOP stacks in the GOM. MMS, therefore, is confident that industry can adequately safeguard the BOP control panels and adequately train its personnel to prevent the inadvertent operation of blind-shear rams.

MMS disagrees with IADC's comment that the successful operation of blind-shear rams permanently forecloses other well control options. Many wells have been controlled after blind-shear rams shut them in. At least four of the wells identified in the table above regained control of the well by lubricating heavyweight drilling fluids into the annulus to kill the well (8/4/78; 10/5/81; 5/15/82; 3/20/87). While lubricating or bullheading fluids into a live well may not be the preferred method for regaining control of a well, it is better than losing total control of the well.

Finally, one commenter indicated that the operating limits of blind-shear rams are frequently unclear for some drilling operations due to pipe grades, mud weights, and wellbore pressures, and that consideration should be given to ensure that these limits are clear. We agree that this is important, so we have added a paragraph to § 250.416(e) that requires the lessee to address these issues. The new paragraph requires the lessee to provide information that shows that the blind-shear or shear rams installed in the BOP stack (both surface and subsea stacks) are capable of shearing the drill pipe in the hole under maximum anticipated surface pressures.

• *Comment on § 250.441 What are the requirements for a surface BOP stack?* MMS should revise the rule to allow an exception for less than four remote-controlled BOPs.

Response: Because you may include this request in your APD submission to the District Supervisor, we did not revise the rule to allow the use of less than four remote-controlled BOPs in certain situations.

• *Comment on § 250.442 What are the requirements for a subsea BOP stack?* One commenter asked why didn't MMS identify the costs associated with the subsea accumulator requirements.

Response: MMS did not specify any costs for this requirement because lessees/operators were already required by the regulations to have an accumulator that provided for fast

closure. API RP 53 now provides guidelines for determining the minimum requirements and performance for the subsea accumulator.

• *Comment on § 250.442 What are the requirements for a subsea BOP stack?* A commenter noted that section 13.3 of API RP 53 does not include subsea accumulator volume requirements that can be audited other than the specific response times.

Response: MMS will review BOP test records, including documentation of the closing times of ram and annular preventers, in evaluating BOP system performance.

• *Comment on § 250.443 What associated BOP systems and related equipment must my BOP system include?* MMS should clarify that this section applies to both surface and subsea BOP equipment. The commenter also recommended that MMS consider adopting more sections of API RP 53 and/or API RP 16E instead of having a number of the specific requirements stated in the BOP system sections (250.440 to 250.451). Adoption of these documents would provide a more rigorous standard than the current MMS requirements.

Response: We clarified the intent of this section by revising the title to read "What associated BOP systems and related equipment must my surface and subsurface BOP systems include?" MMS will consider incorporating additional sections of API RP 53 and API RP 16E or possibly the entire document in possible future revisions of the drilling regulations.

• *Comment on § 250.446 What must I do to maintain and inspect my BOP?* MMS should consider incorporating parts of other quality management standards into the regulations, such as API Q1's, "The supplier shall establish and maintain documented procedures for implementing corrective and preventive action * * * and API Spec 16A's, Appendix G, "The operator of drill through equipment manufactured to this specification shall provide a written report to the equipment manufacturer of any malfunction or failure which occurs * * *"

Response: The quality management program incorporated by sections 17.12 and 18.12 in API RP 53 pertains to a planned maintenance system for BOP equipment and to maintaining copies of equipment manufacturer's product alerts and bulletins. The purpose for incorporating these sections was to ensure that BOP equipment is maintained properly. It was not to require equipment specifications or certification requirements for BOP equipment. MMS believes that

incorporation of the specific sections of API RP 53 will meet the objective of identifying appropriate maintenance requirements.

• *Comment on § 250.448 What are the BOP pressure tests requirements?* MMS requirements for a low-pressure test provide a lower acceptance standard when compared to sections 17.3.2 and 18.3.2. MMS should consider incorporating these sections into the regulations.

Response: These sections of API RP 53 state the following on low-pressure tests: "When performing the low pressure test, do not apply a higher pressure and bleed down to the low test pressure. The higher pressure could initiate a seal that may continue to seal after the pressure is lowered and, therefore, misrepresenting a low pressure condition." MMS recognizes that this situation could occur on a low-pressure test, but we also recognize that it may be difficult to precisely apply 200 to 300 pounds per square inch (psi) to the component to be tested. Based on our experience and judgment, we have allowed operators to conduct a low-pressure test (200 to 300 psi) if the initial pressurization did not exceed 500 psi. Any pressure higher than 500 psi must be bled to zero and the test reinitiated.

• *Comment on § 250.448 What are the BOP pressure tests requirements?* MMS should consider testing ram preventers at an intermediate pressure, which ranges between 2,000 and 4,500 psi depending on closing ratio, because it provides a better measure of fitness for purpose. This intermediate pressure is another possible mode of failure. These intermediate pressure tests would be conducted initially and on an annual basis.

Response: MMS is unlikely to require such a test until it becomes an accepted industry practice.

• *Comment on § 250.449 What additional BOP testing requirements must I comply with?* The requirement for variable bore rams (VBRs) to pressure test against all sizes of pipe may be more rigorous than the largest and smallest sizes as recommended by API RP 53 (sections 17.5.5 and 18.5.5).

Response: We have revised the requirement in § 250.449(f) to now require you to pressure test VBRs against the largest and smallest sizes of pipe in use, excluding drill collars and bottom-hole tools. This conforms to API RP 53 recommended practice. Also, one of the findings from a 1999 research project, "Reliability of Subsea BOP Systems for Deepwater Application, Phase II DW, by Per Holand of SINTEF Industrial Management," recommended