



**U.S. Department of the Interior
Minerals Management Service
Gulf of Mexico OCS Region**

Notice No. 066

September 26, 1977

OCS Operations Safety Alert

Blowouts from Surface Casing--Conductor Casing Annulus

Recently, several operators have encountered a significant shallow gas flow from the annulus between conductor and surface casing. This flow has occurred several hours subsequent to cementing surface casing while nipping down the B.O.P. stack. In some cases, drilling personnel have had to abandon the drilling facility, or move the drilling vessel off location.

This delayed flow of gas is believed to develop because of a loss of hydrostatic head of the cement column, caused by the cement slurry either dehydrating across permeable zones, or entering a weak or thief zone. This leads to migration of gas upward through small channels in the cement-in-place, or through channels outside the cement-in-place, once the hydrostatic head becomes less than the pressure of any gas bearing zones that have been drilled through. Once this migration up the cement column starts, it results in an additional lowering of the hydrostatic head, which further increases the rate of channeling, until at some point in time there is sufficient loss of hydrostatic head so that a blowout occurs.

If an operator has a well in which there are possible permeable zones in the shallower portion of the open hole, precautions must be taken to prevent the occurrence of this type blowout. The first precaution would be to examine an electrical log of the hole to determine the existence and location of these potential problem zones. If gas sands are exposed, then procedures such as the following are used in order to prevent or minimize the delayed gas flow occurrence:

1. Run the casing using centralizers.
2. After the surface casing is run the casing annulus is thoroughly circulated to remove any gas cut mud and to condition the hole prior to cementing.
3. Use of a low weight cement slurry followed by class H neat tail-in.
4. Use of a fluid loss additive or gel cement to control excessive cement water loss to permeable zones and minimize undesirable dehydration.
5. Reciprocate or rotate casing or both, if feasible.
6. Consideration should be given to using a two stage cementing tool, if necessary.
7. Monitor returns constantly while cementing to detect partial or lost returns or other undesirable occurrences, in order to determine the necessity of running a cement bond log or temperature log and performing remedial cementing prior to removing the B.O.P. stack.
8. Observe annulus flow or pressure after cementing for 6-8 hours or until a cement compression strength of 500-700 psi is reached to determine whether or not to remove the B.O.P. stack entirely. The B.O.P. stack might be partially nipped down, but only to the extent that it can still be used for safely controlling and bleeding off a delayed gas flow.

The above could help prevent this type blowout where potential delayed gas flow conditions exist. The applicability of this safety alert should be determined by each OCS operator after a thorough review of his particular drilling procedures.

[signed] D.W. Solanas

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