



## CASE HISTORY

Drilling and Completions

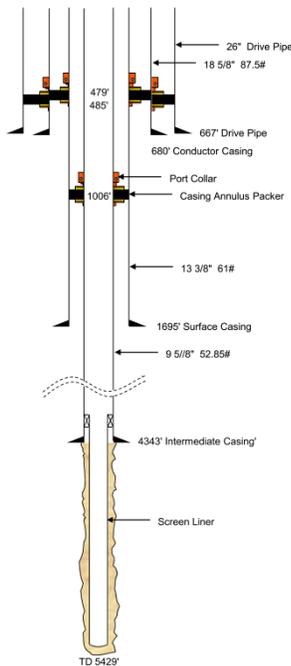
Casing Annulus Packer

# CASING ANNULUS PACKER PROVIDES INSTANTANEOUS SHALLOW GAS ISOLATION

### Dealing with Annular Gas Flow after Cementing



**CHALLENGES:** Drilling through gas formations poses unique risks such as annular gas flow after cementing. Annular flow related to cementing surface casing has been identified as one of the most frequent causes of loss of well control incidents in the Gulf of Mexico (GOM) and inland waters along the Gulf Coast, Indonesia, Australia, as well as other coastal regions. Poor cement bond has been credited



with the most significant cause of annular casing pressure in outer casing strings. Statistics from the GOM indicate that thousands of wells have casing pressure and potential to lose hydrocarbon reserves, pollute the potable water column, or leak at the sea floor. After hurricane Katrina and Ike, we have seen several hundred wells that are currently being plugged and abandoned. Many have annular gas migration between the casing strings requiring remedial cement squeeze and mechanical isolation to stop the leakage of annular gas. When zonal isolation of gas wells is not achieved, gas can migrate behind the casing, thus charging shallow zones. These over-pressured shallow gas zones may be drilled into unexpectedly and become very costly issues for the operator. The oil and gas industry has long been plagued by gas migration into the cement sheath, resulting in a lack of zonal isolation. Due to well control concerns, these situations become more critical when drilling through gas zones.

**SOLUTION:** One way to assist in controlling gas migration after the casing string is in place is through the use of a mechanical barrier, such as a Casing Annulus Packer (CAP). CAPs can be placed anywhere in a casing string and inflated with wellbore fluids, water base mud, oil base mud, synthetic based mud, and cement. Once the bore hole is drilled, placement of the CAP is determined based on the zonal isolation requirements. The primary cementing operation is performed and completed by bumping a casing plug. After the plug is bumped the CAP can be inflated to provide instantaneous isolation creating a mechanical barrier between the casing string and borehole or casing. Secondary stages can be performed if required, utilizing a Port Collar or Stage Tool above the CAP.