EXHIBIT C
(Updated 10/21/2010)

A REVIEW OF FEDERAL LEGISLATION REQUIRING THIRD-PARTY CERTIFICATION

Introduction

The State Lands Commission Staff (staff or SLC staff) is responding to the Lt. Governor's request to review the recommendations which are incorporated into two bills presently being considered in Congress (HR3534 and HR5626), regarding "third-party" certification for blowout prevention equipment (BOP or BOPE) and well design (with respect to casing and cementing). Staff has reviewed the latest version of those bills, and the Notice to Lessees (NTL's) sent by the Minerals Management Service (now the Bureau of Ocean Energy Management, Regulation and Enforcement or BOEMRE), and specifically NTL No. 2010-N05 (June 8, 2010, entitled "Increased Safety Measures for Energy Development on the OCS"), and evaluated to what extent the provisions in these bills would enhance the offshore drilling safety requirements already provided in state regulations, policies and procedures. Staff has also made inquires of other coastal states regarding whether they are considering adoption of the third-party certification or other changes to their regulations as a result of the Deepwater blowout.

The bills and the NTL's reviewed are very similar, and require that the Lessee and/or Operator of an offshore drilling operation "obtain written and signed certification from a BOEMRE approved independent third party" for the BOPE and well design ("for safe cementing and casing"). However, the detail of the third-party review is left somewhat vague, and one must assume that is to give BOEMRE the necessary latitude to develop standards appropriate for the varied drilling conditions encountered in the various drilling regions affected, and the differences between surface and subsea blowout prevention systems.

HR 3534 requires the Secretary of the Interior to establish appropriate standards for the approval of independent third-party certifiers for BOPE, well design, and cementing. HR 5626 also requires the "appropriate Federal official" to issue regulations that require the operator to obtain a written and signed certification from an approved independent third party that has conducted a detailed physical inspection, design review, system integration test, and function and pressure testing of the BOP. HR5626 also requires a third-party certification of the well and cementing design. It appears that the requirements discussed in both bills are intended to apply to state waters as well, and HR3534 adds that a State may submit a plan demonstrating requirements comparable to, or alternate requirements providing an equal or greater level of safety. Additionally, although not part of the requested review, staff also discusses the third-party certification review required for "requalification" of offshore structures (platforms in particular) currently required by current OCS federal regulations, and required by MRMD staff as part of all recent applications for projects from existing platforms, both state and federal (Platforms Holly, and jointly with the BOEMRE, Platform Hogan).

General Considerations for the Use of Independent Third-Party Certification

1. Risk/Benefits. Drilling in California waters poses less probability and consequence of well blowouts than in other states. Formation pressures are fairly normal, reservoir productivity is generally lower, and water depth is shallower. Drilling operations are less problematic because they are primarily development wells in fields where conditions are known factors, rather than exploratory wells. Drilling operations are almost exclusively conducted from fixed platforms rather than floating facilities, and therefore BOPE stacks are located on the surface (production deck of the platforms), rather than on the seafloor. This accessibility facilitates inspection, maintenance, and repair of the BOPE and control systems.

2. Staffing. The greatest benefit from third-party certification would be expected where inspection and enforcement staffing levels are low compared to drilling activity levels. The scale of California operations, especially drilling operations, is virtually incomparable to the Texas-Louisiana Gulf Coast with its hundreds of platforms and drilling vessels and thousands of wells. Additionally, because of the joint jurisdiction of the SLC and the Division of Oil Gas and Geothermal Resources (DOGGR) on offshore drilling, the percentage of operations/installations inspected is much higher than in the Gulf. That being said, however, the uncertainties of agency resources created by State budget difficulties, and future hiring and retention of employees with the required experience, may increase the usefulness of third-party certification in the future.

3. Complexity of design/installation. The basic benefit of third-party certification derives from the independent analysis of engineering design and observation of the implementation of that design. In simple terms, the more eyes looking at something, from different angles, the more likely a design or installation deficiency is to be detected while there is still time to do something about it. The most common use of the third-party verification process is in the design and construction of large civil engineering projects. Such projects are characterized by massive scale, high degree of complexity, use of cutting-edge technology, frequent use of new or unique designs, materials, and installation procedures, and **high consequence of failure**. For such projects, third-party verification has long been recognized as central to quality control. The Certified Verification Agent (CVA) program that MMS developed for the design and installation of offshore platforms (discussed later) is an excellent example of an application where third-party certification produces substantial benefit.

Drilling offshore California involves only one of the above characteristics. The consequence of a blowout is unacceptable (high consequence of failure). This one inescapable factor, however, is of sufficient magnitude to require a detailed and sober review of the proposed uses of independent third-party certifications, even in our lower risk drilling environment.

4. Other Coastal States. SLC staff contacted other states to discuss their actions subsequent to the BP incident and Notice to Lessees issued by the Minerals Management Service. An Alabama Oil and Gas Board staff member informed our staff

that the region they manage contains deep, sour gas reservoirs but not oil zones. The Texas Railroad Commission staff engineer stated that they were in the process of updating their reporting forms to operators in order to gather more information on the oil and gas operations in bays and inland waterways. Neither agency indicated or knew of any plan to adopt the third-party review process at this time.

Third-Party BOPE Certification
Discussion and Recommendations

1. The Proposed Federal Legislation. The independent third-party certification for BOPE in the legislation requires a detailed physical inspection, design review, system integration test, and function and pressure testing of the BOPE to determine that:

- [the] BOPE is designed for (the) specific drilling conditions, equipment, and location where it will be deployed, and for the specific well design;
- (the) BOPE will operate effectively and as designed when deployed;
- each blind shear ram or casing shear ram will function effectively and is capable of shearing the casing or drill pipe;
- emergency control systems will function under the conditions in which they will be deployed; and,
- (the) BOPE has not been compromised or damaged from any previous service."

The equipment must be recertified every 180 days after "commencement of drilling," and the emergency control systems of BOP's must be tested at least every 14 days.

2. Current State Review & Inspection. Both the SLC and DOGGR have specific and comprehensive BOP equipment regulations. All well programs are reviewed by both agencies to ensure compliance with those regulations. The DOGGR has the primary responsibility to inspect the BOPE on drilling projects anywhere in the State, including offshore drilling on state leases. Their inspections ensure that the BOP equipment required is present and in working order, and require both function and pressure testing upon the initial installation (generally after the surface casing is set and anytime the equipment is changed on subsequent casing settings). Staff may, and usually does, send an engineer out to witness the inspection on state offshore operations. We recommend that the DOGGR be included in any further discussions of their inspections and/or comments on third-party certification discussions.

As discussed in part above, where you have limited resources in a very active area, such as in the Gulf of Mexico, third-party certification appears to be a valuable benefit for the regulators. In California waters, where activity is more limited and state oversight is available, such certification is less beneficial, but, as described below, still presents some benefits to state operations.

3. Current BOEMRE Implementation. In discussions by staff with the Pacific BOEMRE, they have already commenced requiring their federal lessees to use an independent third-party professional engineer, of the lessee's choosing, to certify all current BOP equipment in use in the Pacific Outer Continental Shelf (OCS), per their NTL 210-N05 (and in anticipation of the legislation). They are also requiring all casing design and cementing programs submitted to have been reviewed and approved by an independent third-party professional engineer (also of the lessee's choosing). If and when any legislation is passed to require the third-party certification, the regulations will be amended to clarify the process, and, we assume, to develop guidelines for the required qualifications of those certifying agents. We would recommend that SLC staff engineers be involved in those discussions, or if that is not practicable, to review the approved candidates for approval on state offshore operations.

4. Benefit. Although it has been noted that state oversight on the function and pressure testing of the BOP equipment on drilling wells is a primary function of DOGGR, and a secondary function of Commission staff, there are additional benefits that a more detailed inspection and certification can provide beyond those already in place. Staff has considered the legislation as stated and discussed above, but has also considered the depth of the certification that should be required, since the specifics of the "details" of the review are silent. If only determining that the equipment is sufficient and in place, functioning and able to hold pressure, little benefit is achieved over current inspection. However, if the certification goes further, to inspect the internal mechanism and materials and to determine the condition and serviceability of the equipment, as well as the optimum layout of the auxiliary equipment and design of the system as a whole, then there is a significant benefit, not only to the public and personnel safety for blowout prevention, but to the operator's drilling contractor who may not have considered the design for the specific platform space and operation. Further, a third party may also provide experience that state and federal regulators don't acquire locally because of the limited exposure to drilling operations.

While requiring recertification every 180 days may seem excessive, it would, at least initially, serve as an impetus for a higher level of maintenance on the BOP equipment (in order to assure passing the inspection and reducing the down-time and cost to the operator).

5. Recommendations.

- Staff's research concludes that some benefits may be derived from third-party certification of the BOPE, and so recommends support to apply that measure to State requirements for drilling offshore wells. Staff would like to be in a position to participate in the discussions regarding the detail of the certification, and the requirements and approval process for the third-party consultants. Regardless, staff recommends that third-party certification of the BOP equipment be added to the current process for updating our state offshore drilling regulations, and provide the detail staff, in consultation with the DOGGR, believes required to be a benefit.

- Require re-certification every 180 days.

- State regulations (both Commission and DOGGR) require that BOP equipment be function tested daily and pressure tested on a weekly basis (as opposed to every 14 days in the legislation), and, in addition, that the "emergency shut-in system" (a remote shut-in in the event of communication failure between the rig and BOPs) for subsea BOP equipment (extremely rare – last seen in the mid-1980's) be tested at least every 14 days. Subsea preventers must also be "stump-tested" on the drilling vessel prior to installation on the well head (on the sea floor). Therefore, the pending legislative requirement is already in place on California state operations.

- Although not discussed, we also recommend that all offshore wells employ a blind-shear pipe ram in place of the blind ram used now. This would provide one more tool in a well control situation and not add any additional height to the BOP "stack" (since physical safety and space limitations may require significant diversion from the specific stack requirements of the pending federal legislation). Staff believes that the space restrictions on current drilling platforms will necessitate some tailoring of the final regulations for the local drilling conditions (and as alluded to in the first bullet of the proposed legislation discussed above).

Third-Party Well Design Certification Discussion and Recommendations

1. The Proposed Federal Legislation (both HR3534 and HR5626). The operator must obtain a written and signed certification from an independent third party approved and assigned by the appropriate Federal official that any proposed drilling well design meets the requirements for safe cementing and casing.

2. Current State Review & Inspection. The SLC has specific and comprehensive regulations regarding casing design (for exploratory wells) and cementing operations. All well programs are reviewed by both SLC and DOGGR to ensure compliance with those regulations. Both agencies require the operator to submit a fully detailed drilling program for staff review. SLC staff engineers provide a comprehensive review of all drilling and work-over programs, DOGGR permits, and other collateral materials relevant to the drilling, completion, and production of every project, and prior to the drilling of each well, on state leases. The staff review includes the casing design, cementing program, drilling fluids program, blowout prevention equipment and spill prevention plan, and all other relevant material and information before approving the well.

The casing design and setting depths are reviewed by staff. Staff uses pressure gradient and reservoir pressure data to calculate maximum allowable casing setting depths with applicable engineering safety factors. The collapse strength, burst rating and tensile stress factors are all considered when approving the type, weight, grade and

coupling thread type of the casing to be run. Upon completion of cementing the casing, a casing bond log, or similar electronic log, is required by SLC regulation to ensure adequate and complete cementing of the casing and hole have occurred. Wells to be "redrilled" must also pass a pressure test of existing (original) casing, and a casing inspection log is required to ensure the integrity of the casing before the redrill commences.

Finally, staff reviews the cementing procedure for each casing string included in the drilling program. All procedures are reviewed to ensure adequate fill volumes are being used behind the casing strings to cover oil and gas zones and fresh water zones. Compositions of the cement mixtures (and additives) are also reviewed for adequate compressive strengths.

3. Current BOEMRE Implementation. As stated above, it is our understanding, after discussions with the Pacific BOEMRE, that they have already commenced requiring all casing design and cementing programs submitted to have been reviewed and approved by an independent third-party professional engineer of the lessee's choosing. Re-stating again, if and when any legislation is passed to require the third-party certification, the regulations will be amended to clarify the process, and, we assume, to develop guidelines for the required qualifications of those certifying agents.

4. Benefit. While staff provides the same comprehensive review, a third party will provide another "set of eyes," particularly for exploratory wells, where more unknowns come into play. The engineering firms should have the latest well drilling software and, we assume, would have the latest resources and information regarding drilling and specific problems to which we may not always have access.

5. Recommendations.

- Staff recommends support for this requirement in the pending legislation.

- Staff believes that, although a comprehensive, thorough and independent review is provided by the State, and safety benefits may be marginal in the developed fields of California state waters, the added review could nonetheless be meaningful, especially on exploratory wells.

- The added review would be done prior to submission of the drilling program to staff (and the DOGGR), and would not slow down or add to the review process already conducted.

Third-Party Structural Certification
Discussion and Recommendations

1. Current BOEMRE Regulation. Under the Federal CFR30, 250.900, operators wishing to construct new platforms, or which contemplate major modifications of, or repairs to, existing platforms, must follow and apply the Federal Platform Verification Program (PVP), which requires a third-party verification of the analysis and design by a "Certified Verification Agent" (CVA). Although this is already a current federal regulation, and not part of the pending federal legislation, staff felt it was important to add this discussion to demonstrate that we have a need to adopt some of the latest federal requirements,

2. Current State Requirements. For any modification that increases loading on a platform by 10 percent or more, SLC requires the platform requalify per API guidelines. In addition, for platform requalification, staff applies the Federal Platform Verification Program (PVP) which requires a third-party verification of the analysis and design by a Certified Verification Agent (CVA).

There is currently no other state regulation requiring platform requalification. However, SLC staff has required all platforms that propose new projects involving drilling into state leases to requalify under the federal guidelines to the latest storm and seismic standards. We have coordinated efforts with the MMS (now BOEMRE) to requalify federal platforms that have applied to drill into state leases. Additionally, SLC staff requires all the operators to follow current API RP 2A Standards, Building Code Standards, American Institute of Steel Construction (AISC) standards, American Concrete Institute (ACI) standards, American Welding Society (AWS) Standards, etc. for all the platform structural modifications and repairs. Also, we require that all engineering design documents to be certified by a California Registered Civil/Structural Engineer.

3. Recommendation. Staff recommends that the federal standards for requalification of offshore structures, specifically the Platform Verification Program and use of a Certified Verification Agent, be added to the current process updating our state offshore drilling regulations.