

International Association of Drilling Contractors



**Jack-up Committee – Regular Session
July 17, 2014
IADC Offices
10370 Richmond Av
Houston, Tx 77042**

Minutes

CHAIRMAN'S WELCOME & OPENING REMARKS:

Mike Dowdy opened the meeting at about 9:07 am and welcome everyone attending. Doug Stock and Jim Brekke were attending by Webinar and Mike thanked them for joining the meeting. Everyone was asked to sign-in on the sign-in sheet at the back of the room and to leave a copy of their business cards.

IADC INSTRUCTIONS:

Alan Spackman reminded everyone of the IADC Antitrust Policy and Guidelines and to limit discussions to the technical issues of importance to IJUC. Copies of this policy are available for everyone in attendance.

OGP/ISO AND MEETINGS NOVEMBER 2014

1. ISO Standards: Mike Hoyle (TC67/SC7/WG7 Convener) reviewed the progress of the OGP/ISO 19905 standard which was issued in 2012. In May 2014 the panels addressed known outstanding comments and a few new items that had been found since the last meeting. Some of these are carried forward to the November meeting.

OGP/ISO 19901-9 Structural Integrity Management needs a liaison between this work group and our standard (OGP/ISO 19905). There is no plan yet as to what issues will be covered and it is important that this standard does not encroach on our standard. IJUC position is that jack-ups are maintained in class and this addresses all the concerns OGP/ISO 19901-9 is intended to address.

Other issues which are actively under review are foundation stiffness and capacity. Seismic issues are in discussions with several work groups. UC Davis has a JIP for MODU exposed to earthquakes where they intend to subject jack-up models to ground motion. This study is to include looking at attenuation and other issues such as soil added mass.

2. Going on/off Location: SC7 strongly suggested WG7 to begin work on issues related to going on/off location. The work needs to cover that period where no current standard addresses the activity. This would represent the period of time from after the rig arrives 1) which is then positioned over the site, 2) setting up on the location, 3) re-entering the water, and 4) leaving the site. A question posed was if jack-ups and liftboats should be differentiated in this work. Similarities between the two types of units were noted and that some useful information could be learned by studying these similarities. An important consideration that should be included is wave loads and inclination. Noble has a guidance document that may be useful. Mike Hoyle

International Association of Drilling Contractors

advised that he is looking for volunteers, documented studies, and owner guidance documents on “installation and removal”. Everyone should send Mike Hoyle information they are willing to share. Mike Hoyle said this will be covered at the WG7 meetings in November. At this point TC67/SC7 has not blessed a new work item which is an advantage as it allows development of a standard before the clock starts on new work items. ISO now mandates that that a standard follow the development cycle of 4-years from work item to FDIS. In response to a recommendation that JRC 2012 could be used as a basis it was noted that this document is not used by the industry. It was also recommended that any going on/off document represent the “state of the art”. Mike Dowdy said an IJUC meeting will be organized soon.

3. Sanctions: API concluded that working on an ISO standard is OK up to the point of publishing. API may not be able to publish ISO standards under the API nameplate as this would be considered sharing technology. The IJUC chairman recommended each company evaluate their participation in the ISO process.

ABS' PROJECT REPORT – PHASE II GOING ON/OFF LOCATION:

The chairman gave a very brief opening to the discussion. The industry believes that the current practice needs to be looked at with the objective the guidance will result in less damage to jack-ups when going on location. Existing design rules address other areas that do not meet the need for going on location. Some rig design features (not identified at meeting) have resulted in limiting location to only those rigs. There is a need to identify the limiting and controlling issues. It is critical that the operators (users), marine warranty surveyors doing rig moves, class societies, and owners of the rigs work co-operatively to address rigs that are going onto or coming off location. ABS has already put a lot of effort into working this issue.

1. ABS Phase II, Going on location: Pao-Lin Tan, ABS Technology presented the current status of ABS' going on location. The first part of the presentation described the Phase I work that was intended to define the issues but was not expected to develop specific solutions. The objective of the ABS study is to develop a simplified methodology which the contractors and designers can use to assess or evaluate for class. The Phase I work resulted in a scope of work (SOW) for Phase II. Keppel-FELS is funding this work which continued the studies from the lessons learned from Phase I. Phase II will advance the work on touch-down that was begun under Phase I with the objective of better understanding the interaction at the time the spudcan contacts the seabed. This interaction is dependent on the rig response when touching the seabed. Damping and soil impact will be considered. The second part of the study will look at pull-out. The study is intended to evaluate a real case. Alternate processes are intended to be part of the pull-out study. The Phase II effort will be used to develop a new SOW for Phase III and ultimately Phase IV. In these last two phases the expectation is that the soils will not be critical. By OTC 2015 ABS expects the work on touch-down to be completed. Currently ABS is still discussing with Keppel the approach to assessing pull-out. They would welcome methods used by drilling contractors when going on/off location to evaluate as part of thier study. Anyone interested in the ABS going on/off location study should contact Pao-Lin Tan.
2. Discussion of ABS presentation and the issue in general: Soils drives the loading on the leg when going onto a location and needs to be a priority. Colin Nelson (BP) advised the group that the larger problem, because this occurs regularly in the operation of a jack-up, is touch-down rather

International Association of Drilling Contractors

than elevated storms. One problem that needs to be studied is the horizontal force introduced by the rig move in combination with the elevating system during elevating. Experimental work could be helpful. It was noted that there is a JIP "Wind Jack" that plans to address this issue. Noble and EnSCO have been participating in this JIP on a limited basis. The work is almost complete.

3. The community needs to get involved including the operators and contractors. Instrumented rigs will help provide "real" answers on this issue. Doug Stock responded to a question about the instrumentation packages, which he manufactured for four drilling contractors, can be used to perform measurements for going on/off location. The key is to have good records of what activities are underway which can be coupled to the instrumentation results. He also noted this is outside the scope of the original work. He has provided consulting work for a major operator on a GoM measurement program. The consensus is that instrumentation packages for future going on/off location are recommended.
4. Mike Dowdy will organize a working group of drilling contractors and others to discuss this issue.
5. ABS was asked if they could provide damage incidences to help guide the study. Mike Dowdy and Pao-Lin Tan were to meet to discuss as it was recognized by all that there would have to be limitations on any such information.

OGP/ISO 19905 BENCHMARK SEISMIC STUDY:

The original expectation in development of the seismic clause was that only a small number of jack-ups would fail the screening check. The benchmark study indicated that the screening approach, based on ISO 19905, resulted in approximately 30%, a larger number than expected, of jack-ups fell into the Zone 2 and 3. Rigs in these zones will require a more comprehensive seismic study on the part of the assessor. The foundation was found to be the primary failure.

It is believed the screening approach used by the consultant was conservative but the benchmark study has shown a potential difficulty in applying the seismic section. One conclusion is the seismic maps need better contours. Another problem identified with using the maps is the need for good information on the longitude and latitude of the rig. The map contours were a particular problem in the Arabian Gulf where some rig locations could have been interpreted to be near Zone 1 (lower seismic risk) or Zone 3 (most severe) contours.

Digital Structures has proposed a study to evaluate the API maps being developed as replacement to the current ISO 19901-2. The study would cost \$20k. IJUC was asked to consider funding this work.

It was noted that the benchmark seismic study did not follow the procedure to develop the seismic response spectrum as described in ISO 19901-2. This was because the consultant's perceived limitation in SACS. Another comment was the foundation was in the ballpark but the structure is not representative for a seismic study. It was also noted that the base shear is about what would be expected but the overturning moment appeared to be too high resulting in high vertical loads. The analysis process requires a combination of model combination and dead loads. Getting this correct is critical for the analysis.

The consensus from the benchmark work is that it is important to get the screening study correct.

International Association of Drilling Contractors

Colin Nelson reported that BP has been through a full seismic analysis but has found it does not make economic sense. The BP study was primarily static. It is important to have the proper dynamic model and the metocean model is not necessarily adequate.

HURRICANE CALIBRATION (CURRENT PROJECT STATUS & ROWAN PARIS)

The dynamic response work is complete. The next work is on the structural assessment. Currently we are working on the Ensco 69 and will do the structural assessment on this rig followed by the Adriatic III. The Rowan Paris is another rig with an active instrumentation package with good data from the instrumentation package. The soils at this location are clay over stiff sand which is a case of interest to ISO 19905 Panel 4. Dave Lewis and Doug Stock are to update the schedule and advise the committee when the first two rigs will be completed.

FOUNDATION HORIZONTAL AND ROTATIONAL CAPACITY

UAW/NGI published work which suggests the current horizontal and vertical capacity in ISO 19905 is too liberal based on studies they have completed. The work is based on a full Eulerian (fluid) model which was not available when Sage did the study for IJUC that resulted in the current capacities. The result of their work is a recommendation that would reduce the capacity by around 50%. This will have significant negative impact on site assessments. Jack Templeton feels the work UAW has done is good but the broad application to all deep penetrations in clay is not correct. He noted that applying UAW results to a site assessment produces jack-up responses which does not match observed behavior.

GoM ANNEX & TRS AREAS

This document was completed approximately 8-years ago. With the recent work of API 2Met, a question has been raised if our technology is still valid. John Stiff has discussed the GoM metocean with Andy Cox (Oceanweather) who said API came at the definition of sudden hurricane differently than IJUC. API looked at the worst case in a contour versus IJUC which used a mean.

API used joint probability in there metocean work. Based on the work to date, the wave height may increase by 5 feet (B.N. this is probably a reference to the full population hurricanes).

The GoM Annex committee needs to discuss the next step. We need to do something about survivability. The current general language may not satisfy BSEE if something happens. The consensus is the industry needs a methodology to perform survival analysis.

ISO 19906 ARCTIC STANDARD AS APPLIED TO JACK-UPS

Newfoundland has elected to create their own standard. Therefore, ISO 19905 will not apply in this province. All other areas will be subject to ISO 19906. The primary concern is the "Normal ULS" and "Abnormal ALS" have a requirement to meet 10^{-4} conditions. All conditions will require wave and ice effects. The load factors are to be from ISO 19906 and these are significantly higher than our values. The analyst will need to use Canadian deal load factors. It is believed the current wording will result in jack-ups not being able to operate in Canada as the structure of the document does not permit the application of seasonal data.

The convener for this standard has said all the issues have not been resolved. As a way forward the WG7 and WG8 conveners are working on wording to accommodate jack-ups.

International Association of Drilling Contractors

The drilling contractors need to be aware and involved if they want to work in Canadian and other Arctic waters.

HSE “AGEING AND LIFE EXTENSION PROGRAMME”

HSE has issued a document (Ref: “Key Programme 4 (KP4) Ageing and life extension programme; A report by the Energy Division of HSE’s Hazardous Installations Directorate”) on aging rigs. The purpose as stated by HSE is “The HSE Key Programme 4 (KP4) focuses on the management of asset ageing and life extension by duty holders.” This work was to evaluate safety issues that may result from continued operations of rigs past their original design life. Norway has a similar concern. A majority of the IJUC members were not aware of this document and to their knowledge have not participated in the surveys of the fleet referenced in the report. Jenny Lu (DNV) volunteered to discuss with the DNV group that has been working on aging rigs.

The primary focus, based on past discussions, is the older semi fleet have existing fatigue damage that has occurred and this may result in fatigue issues with continued operation. The biggest challenge is defining the MOU’ operating history. Ensco noted that this has been a problem with doing fatigue studies to determine the fatigue life for their older units. It was noted that fatigue of jack-ups is not perceived by HSE to be a significant problem.

The timing for implementation of the recommendation is over a 5-year period and will be part of the safety case review in the major hazards report.

MEETING CONCLUSION

The next meeting was scheduled as follows:

Place: IADC Offices

Date: October 30th, 2014

Time: 9:00 am

Host: Rowan

MEETING HANDOUTS AND RESOURCES

1. ISO TC 67/SC 7/WG 7; Progress report to IJUC meeting of 17th July 2014, DNV GL, Mike Hoyle
2. Key Programme 4 (KP4) Ageing and life extension programme; A report by the Energy Division of HSE’s Hazardous Installations Directorate; HSE, no date.