

**Ultra-Deepwater Advisory Committee (UDAC)**

**October 15, 2008**

**Seventh Meeting**

**Meeting Minutes**

## Ultra-Deepwater Advisory Committee

I hereby certify that this transcript constitutes an accurate record of the Seventh Ultra-Deepwater Advisory Committee Meeting held on October 15, 2008 at the Crowne Plaza Hotel in Houston, Texas.



Kent Abadie, Chair

Ultra-Deepwater Advisory Committee



Date

A Federal Advisory Committee to the U.S. Secretary of Energy

**Ultra-Deepwater Advisory Committee (UDAC) Meeting  
October 15, 2008  
Houston, Texas  
Meeting Minutes**

The UDAC (the “Committee”) Meeting convened at 8:15 a.m. on October 15 in Houston, Texas with the Chair, Kent Abadie, welcoming the members and thanking them for their hard work since the last Committee meeting in Alexandria, Virginia in mid-September. He outlined the important work for the Committee, which required the group to finalize recommendations on the Research Partnership for Securing Energy for America (RPSEA) Draft Annual Plan which would then be released to the Secretary of Energy. Mr. Abadie then reviewed some administrative details including the emergency exits that could be used in the unlikely event of an emergency situation. Additionally, he shared some of the features of the internal safety program at Shell which focused on transportation safety. An interesting aspect of their company program is that it forbids employees from using cell phones or other mobile devices while driving.

The Chair then invited the Designated Federal Officer, Mr. Guido DeHoratiis, to make some opening comments to the Committee. After welcoming the Committee, Mr. DeHoratiis asked Ms. Elena Melchert to conduct a roll call to confirm that a quorum was present. The details of the meeting attendance are provided in Attachment 1. Mr. DeHoratiis stated that no member of the public had requested to make any comments so it was not necessary to set aside any time for public comments. He also approved the meeting agenda as contained in Attachment 2, which had also been provided in the meeting welcome packet. He reminded the group that consensus on resolving issues is nice to have but not required. There is always room for minority opinions. The next meeting, which will be conducted as a teleconference, has been scheduled for October 23 to review and approve the final document for release to the Secretary of Energy. Mr. DeHoratiis reminded the group to produce recommendations on the Draft Annual Plan, but that the Committee was prohibited from making any comments on funding of specific projects or discussions that would impact funding decisions. Finally, Mr. DeHoratiis briefly reviewed the potential for conflicts of interest and asked Committee members to be mindful of those concerns and to direct any questions promptly to his attention.

**Subcommittee Introductory Comments**

At 8:25 a.m., the Chair invited the subcommittee chairs to make brief introductory comments on the results of their deliberations since the last meeting in Alexandria, Virginia in mid-September. The purpose of this part of the program was to give each subcommittee an opportunity to give a broad overview of their activity so that Committee members could assess the general themes and

to make note of possible areas of duplication. The Chair suggested that each subcommittee review highlights, and he asked the Committee to refrain from extended discussions at this stage. The individual subcommittee reports are shown in Attachment 3. Attachment 4 contains the final Committee recommendations.

During the discussion of the subcommittee overviews, Mike Ming, RPSEA, indicated that the commercial contract template discussed at the September 9-10, 2008 meeting had been finalized and submitted to the National Energy Technology Laboratory (NETL) for approval.

The Committee took a coffee break at 10:00 a.m.

### **R&D Program Focus Subcommittee**

At 10:15 a.m., the Committee began the detailed reviews of the subcommittees, beginning with the Program Focus Subcommittee. The complete Subcommittee report is included in Attachment 3.

During the discussion, a new finding evolved that sought to distinguish the environmental theme based on the observation that none of the selected projects addressed the biological and ecological impacts of ultra-deepwater (UDW) development. The recommendation that followed this finding suggests that there needs to be more focus on studies that address the biological and ecological impacts, both positive and negative, of UDW development. Final Committee recommendations in this area developed during Committee discussion in response to the Subcommittee report are included in Attachment 4.

The Committee broke for lunch at 12:05 p.m.

### **Program Scope Subcommittee**

The Committee reconvened at 1:10 p.m. and focused on the recommendations of the Program Scope Subcommittee. The complete Subcommittee report is included in Attachment 3.

The Committee supported the general thrust of the recommendations but also felt that findings #1 and #2 could logically be combined as they both dealt with the same general subject of extending UDW concepts beyond the Gulf of Mexico which could be viewed as an expansion of the overall program scope. However, the specific wording of the legislation identifies two criteria for program scope: a water depth exceeding 1500 meters and ultra deepwater architecture which means the integration of technologies for the exploration for, or production of natural gas or other petroleum resources located at ultra-deepwater depths. This latter criteria can be viewed as expanding the UDW concepts to beyond just the Gulf of Mexico and also apply to deepwater areas off of Alaska and California. Neither of these areas currently meets the water depth criteria

with existing exploration and production programs, but they do meet the ultra-deepwater architecture criteria in the enabling legislation. However, there was a drawback to this potential expanded scope. Specifically, it was observed that in other parts of the program commentary, limited funding had been raised as an issue and therefore in supporting the expanded scope, it was further recommended that wording should be added cautioning the potential impact of diluted funding associated with expanded program scope. This might, for example, limit the size of other competing research projects which could become an issue during subsequent high cost demonstration phases of the program.

The next finding and recommendation were generally accepted except that the implementation detail was deleted and left up to the Department of Energy (DOE) to consider. Furthermore, it was also agreed that finding #4 and its associated recommendation were consistent with the concept of finding #3. Therefore, the finding and recommendations were combined.

Final Committee recommendations in this area developed during Committee discussion in response to the Subcommittee report are included in Attachment 4.

## **Process Subcommittee**

At 2:00 p.m., the Committee moved on to the next topic, the recommendations of the Process Subcommittee. The complete Subcommittee report is included in Attachment 3.

A great deal of discussion was focused on the first finding and set of recommendations dealing with the contracting issues that had been raised at the last meeting. At the conclusion of the discussions, the Committee decided that perhaps it was not necessary to be so prescriptive as to state the specific mechanisms that should be explored to resolve the contracting issue but rather state their disappointment in the results and advise DOE management that this needs to be resolved promptly.

It was agreed that the recommendation dealing with IP rights should be maintained in the Process Section to indicate that the Committee believes that this remains an important issue and needs periodic reinforcement. It was observed; however, that at this stage no specific issues exist with IP rights but the Committee wanted only to keep this subject at the forefront of discussions and to periodically re-evaluate the status in more detail.

The second finding dealing with the desire to do seek breakthrough or grand challenge type of research compared to the incremental results approach was agreed to but it was suggested that this issue belongs more under the Program Focus umbrella and not in the Process area. Furthermore, recommendation 2.2 should be examined by the Editing Subcommittee to see whether it fits in the scope of exiting recommendations in the Program Focus area.

On finding #3, the Subcommittee proposal was accepted with the suggestions that it also make reference to other funding mechanisms and models that are used by others including in-kind contributions of pertinent data. This might include: contributions of rig time, vessel utilization, or sharing core samples. Also, the Committee restated their desire not to dictate a cost share higher than stipulated in the Subtitle J legislation, instead they recommended a higher weighting to the cost share element in evaluating competitive proposals.

The next series of findings and recommendations dealt with contract award performance observing that the number of awards is behind schedule with only three awards having been achieved to date in the UDW area. The following general guidance from the Committee was given to the Editing Subcommittee:

- The first specific finding and recommendation under this theme had been identified earlier under the Program Focus theme which simply states the issue and recommends gearing up the project implementation and award effort.
- It was also agreed that finding #7 of the Process Section which dealt with the time lags in funding decisions, would be moved to follow the last finding and recommendation as they generally deal with the same issue. It was also felt that a positive comment should be made regarding NETL's streamlining effort to speed up the award recommendation review process.
- Next, the earlier sections in the Process section that had been put on hold (e.g., Finding and recommendations 1.1, 1.2, 1.3), were moved to follow the last finding and recommendation so that all of the contractual issues would be concentrated in one section for better readability. The original recommendation 1.1 was expanded to include the suggestion that lessons learned from the URTAC contract award process should be considered in trying to resolve some of the UDW bottlenecks.
- The original finding #4 and recommendation #4.1 were retained and inserted following the prior finding and recommendations.

It was also suggested that the final wording note that although the current focus is on the *Draft 2009 Annual Plan*, some of the comments by the Subcommittee deal with issues that began with the inception of the program. It was agreed that there has been a steep learning curve for RPSEA in the area of contracting.

Final Committee recommendations in this area developed during Committee discussion in response to the Subcommittee report are included in Attachment 4.

The Committee took a coffee break at 3:40 p.m.

## **Program Progress and Value Subcommittee**

At 4:00 p.m., the Committee resumed discussions and turned the subject to the Progress and Values Subcommittee recommendations. The complete Subcommittee report is included in Attachment 3.

Finding and Recommendation #3 pointed to the Committee view that a higher level document should be issued quarterly that summarize progress made and relates that progress to the goals and objectives of the program as opposed to merely reporting facts, figures and developments. Also it was recommended that the list of items proposed for periodic reporting should be classified as suggestions and not minimum requirements. A press release or a newsletter type of format was suggested, no more than 1-2 pages in length.

Final Committee recommendations in this area developed during Committee discussion in response to the Subcommittee report are included in Attachment 4.

## **Societal Value Subcommittee**

At 4:50 p.m. the Committee reviewed the recommendations of the Societal Value Subcommittee. The complete Subcommittee report is included in Attachment 3.

The first finding and related recommendation had been moved to the R&D Program Focus Section based on prior discussions (See R&D Program Focus Finding #5, #6 and #7).

The third finding and recommendation were developed to supplement the discussion on the overall benefits of the Subtitle J program and as such, were appended to the Executive Summary Section. The Editing Subcommittee will ensure that this concept is carried forward in an appropriate manner.

Finding #2 and finding #4 and their associated recommendations are retained in the Societal Impacts Section.

## **Plan for October 23<sup>rd</sup> Teleconference**

At 5:20 p.m., the Chair asked Ms. Melchert to provide the Committee with her instructions for the teleconference on Oct 23. The information was included in the slide that is presented in Attachment 5.

## **Editing Subcommittee**

The Chair then charged the Editing Subcommittee comprised of: Kent Abadie, Stephen Sears, Arnis Judzis, and Dan Daulton, to take the revised Subcommittee reports (Attachment 4) and prepare the final report.

### **Future Committee Plans**

At 5:30 p.m., the Chair took several moments to discuss the future plans for the Committee activities. Specifically, there was a concern that with the amount of activity that is expected to take place within the next year with expected progress on R&D projects, the Committee would likely be overwhelmed with information if the normal meeting schedule were retained. In response, the Chair proposed that two standing subcommittees be formed to monitor progress during the year and that they periodically report out to the full Committee on their observations. In this way during the September, 2009 meeting, the Committee would have a more systematic way of dealing with all of the interim developments. The Chair will draft a proposal for the full Committee to consider but initially there are two subcommittees that are under consideration including:

- 1) Monitoring Program Performance, and
- 2) R&D Portfolio Balance

Both of these subcommittees would report to the full Committee periodically and probably take the form of full Committee teleconferences. The Chair will issue his proposal in November followed by a full Committee teleconference in mid-December. Then the subcommittee activities could commence early next year. Tentatively, the subcommittees would provide an update to the full Committee in March and June of next year.

### **Adjournment**

The Chair adjourned the meeting at 5:40 p.m. noting that the Committee would vote on the final report of recommendations at its next meeting on October 23, 2008.

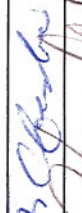

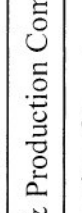
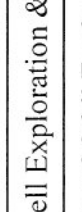
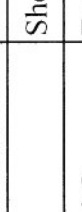
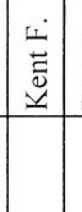
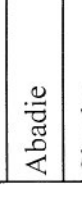



## Attachments

	<b>Presenter</b>	<b>Topic</b>
1	For the Record	Ultra-Deepwater Advisory Committee (UDAC) Attendees
2	For the Record	Meeting Agenda
3	For the Record	Subcommittee Recommendations
	Ray Charles	a. R&D Program Focus
	Arnis Judzis	b. Program Scope
	Luc Ikelle	c. Process
	Richard Mitchell	d. Program Progress and Value
	Quenton Dokken	e. Societal Impact
4	For the Record	DOE Oil and Natural Gas Research, Development, and Demonstration Program
	Ray Charles	a. R&D Program Focus
	Arnis Judzis	b. Program Scope
	Luc Ikelle	c. Process
	Richard Mitchell	d. Program Progress and Value
	Quenton Dokken	e. Societal Impact
5	Elena Melchert	Plan for October 23 Teleconference

**Attachment 1**

**Ultra-Deepwater Advisory Committee Meeting  
Sign-In Sheet - October 15, 2008**

Last Name	First Name	Organization	Sign
Abadie	Kent F.	Shell Exploration & Production Company	
Charles	Raymond G.	ExxonMobil Exploration Company	
Cicio	Paul N.	Industrial Energy Consumers of America	PRESENT PART TIME**
Daulton	Daniel J.	BJ Services Company	
Dokken	Quenton R.	Gulf of Mexico Foundation	
Fowler*	Joe R.	Stress Engineering Services, Inc.	
Ikelle*	Luc T.	Texas A&M University	
Judzis	Arnis	Schlumberger, Inc.	
Mitchell	Richard K.	Devon Energy Corporation	
Seamount, Jr.	Daniel T.	Alaska Oil & Gas Conservation Commission	
Sears*	Stephen	Louisiana State University	
Tranter	Paul T.	Transocean, Inc.	
Wiencke	Paul M.	Research Council of Norway	
Wilson*	Mary Jane	WZI Inc. -	

\* Special Government Employee

\*\* Did not affect quorum

## Ultra-Deepwater Advisory Committee Meeting

### Public Walk-In List - October 15, 2008

Last Name	First Name	Organization
Canale	Sara	Acute Technological Services
Castillo	Edgard	Petris Technology
Gallagher	Morgan	Acute Technological Services
Ming	Mike	RPSEA
Mozisek	Danette	RPSEA
Munshi	Zafar	Titanium Engineers, Inc.
Onyewuanyi	Oliver	Shell International E&P
Schroeder	Art	RPSEA
Williams	Thomas	Nautilus International LLC

**Ultra-Deepwater Advisory Committee Meeting**  
**October 15, 2008**

**Staff Roster**

**U.S. Department of Energy – Office of Oil and Natural Gas**

Guido DeHoratiis Acting Deputy Assistant Secretary	Designated Federal Officer
Elena Melchert	Committee Manager
Natenna Dobson	Office of Oil & Natural Gas, Section 999 Team

**National Energy Technology Laboratory**

Al Yost	Ultra-Deepwater & Unconventional Natural Gas and other Petroleum Resources Technology Manager (Acting)
Gary Covatch	Strategic Center for Natural Gas & Oil
Ginny Weyland	Strategic Center for Natural Gas & Oil

**Technology & Management Services, Inc.**

Mauri Lappinen	Committee Recorder
Karl Lang	Facilitator Support
Rob Matey	Committee General Support
Dominique Wells	Committee Registration Support
Jennifer Presley	Administrative Support

**Attachment 2**



## Attachment 3a

### R&D Program Focus Subcommittee

The subcommittee evaluated the 2007, 2008, and 2009 programs together since several projects are multiyear and related.

First, the subcommittee is pleased that many of the recommendations from previous committee work seems to have been implemented. The RPSEA Ultra Deepwater program concentrates on five major needs:

1. Drilling, Completions, and Interventions Breakthroughs-
2. Appraisal & Development Geosciences and Reservoir Engineering
3. Significantly Extend Subsea Tieback Distances/Surface Host Elimination
4. Dry Trees/Direct Well Intervention and Risers in 10,000 Ft Water Depth
5. Continuous Improvement/Optimize Field Development
6. Associated Safety and Environmental Concerns

The Ultra-Deepwater research program is broken down as follows:

Need	2007 Projects	2007 Funding	2008 Projects	2008 Funding	2009 Projects	2009 Funding
1	1	\$200K	4	\$5495K		\$6250K
2	2	\$3600K	1	400K		\$1500K
3	5	\$6182K	3	6871K		\$3625K
4	4	\$1540K	0	0		0
5	4	\$600K	1	128K		\$3000K
6	0	0	1	1248K		\$500K
Total	16	12,122K	10	\$14,142K	5-10	\$14,875K

Previous comments of this committee that drilling research should be enhanced, that there were too many projects, and that more emphasis was needed on breakthrough and fundamental research seems to have been heard by RPSEA.

RPSEA further delineated the projects into subcategories within the six major categories listed above in their "August Draft Plan, 2009 Annual Plan for Ultra-Deepwater and Unconventional



Natural Gas and Other Petroleum Resources Research and Development Program: Section E 2007 and 2008 UDW Status". The follow table captures the proposed projects for 2007 and 2008 and planned solicitations for 2009 to facilitate a comparison of the program to date.

Project Subcategory	Projects in 2007	Projects in 2008	Solicitations areas planned in 2009
Drilling and Completions	1	2	* Drilling and Completion
Intervention D/H	0	2	* Intervention
Appraisal	1	1	* Res. Surveillance
Development	1	0	None
Flow	1	2	*Stable Flow
Subsea Power	2	1	None
Subsea Processing	2	0	*Processing, Pressure boosting and Instrumentation
Dry Tree – direct Intervention riser	3	0	None
Ops and Inspection	0	1	*Inspection, sensor tools, bridging contingencies
Graduate Students and Long Term R&D	4	1**	*LTR&D
Safety and Environment	1	1	*Environmental issues
Total projects	16	11	5-10 planned

\*designates planned solicitations for 2009

\*\*Project DW 2601 reported as a project but accounted for in the RPSEA funding report

At first glance the project subcategories appear to be well balanced with stronger interest in graduate student, long term research and development and dry tree intervention. The balanced approached appears to be sustained with the planned solicitations in 2009.

Beyond subsea processing and subsea power, it is difficult to determine if any of the projects are considered “breakthrough projects”. However the intent of the long term R&D programs (DW2601-2008) we believe is to identify potential “breakthrough projects”. The process of identifying “breakthrough projects” with long term research may warrant further explanation regarding methodology/analysis and reporting to ensure the research is focused on true areas of long and short term benefit to ultra-deepwater.

Further analysis of the National Energy Technology Laboratory (NETL) Complementary Program projects find limited impact upon Ultra-Deepwater technologies based upon “August 2008 draft - 2009 Annual Plan for the Ultra-Deepwater and Unconventional Natural Gas and Other Petroleum Resources Research and Development Program – Executive Summary”. Three projects are listed:

- 1) HPHT Drilling – Ultra Deep Single Cutter Drilling Simulator (deeper 25,000 ft)
- 2) Environmental impact – inventory air shed contaminants, plume monitoring from unmanned aircraft, 3-D mapping and development of air quality models
- 3) Environmental impact of release/assessment of/production potential related to methane hydrates.

Although the NETL has responsibility for administering the program, perhaps the vast resources of NETL could work more closely with the consortium projects owners to facilitate/support joint development of solutions to the 27 soon to be over 35 projects associated with the consortium efforts as directed by RPSEA. Coordination will be necessary between the primary contractor RPSEA, subcontractors and NETL in order to identify those projects which NETL can immediately impact in order to accelerate project findings, conclusions and commercialization of new technologies. We think this would better serve the EAct 2005, Title IX, Subtitle J, Section 999A (a) which states that, “The Secretary shall carry out a program under this subtitle of research, development, demonstration, and commercial application of technologies for ultra-deepwater.....”. Leveraging NETL’s vast lab and technical staff to collaborate on the consortium Ultra-Deepwater projects we believe will ultimately provide more rapid development of ultra-deepwater resources, enhancing our national security, improving federal royalties and reduce our national debt.

#### Finding #1

The fact that only one research project has been awarded and contracted so work may begin has seriously hampered the process of directing research budgets appropriately. There is no way to know the relative future promise of an area until the first steps have been taken.

#### Recommendation # 1

Greatly intensify the efforts to get projects awarded and underway. This is of paramount importance for the support of the program.

#### Finding #2

The Ultra-Deepwater technologies gaps appear to be well documented by the RPSEA consortium efforts and a balanced approach to technology needs and funding is demonstrated. However, the Complementary Program managed by NETL appears to be heavily leveraged in the drilling area for Ultra-Deepwater (Simulator project) with little to no impact in the remaining 5 categories or 9 subcategories recommended by the consortium managed by RPSEA. Additionally NETL complementary Program appears to be strongly oriented toward the “unconventional oil and natural gas and other petroleum resource R&D”.

Further, the previously identified need to reduce drilling costs for the deepwater seems to have been addressed by RPSEA projects to develop extended reach drilling. This could reduce the number of wells, but we see little research to fundamentally improve drilling efficiency and reduce costs associated with ultra deepwater projects.

#### Recommendation #2

NETL should review not only the projects submitted by RPSEA as program administrator, but also identify NETL resources with expertise in appropriate fields, which are available to work with RPSEA consortium subcontractors to help solve the technical issue at hand. We believe cooperation between these groups could more rapidly bring these technologies to commercialization. If NETL does not have the resources to help, perhaps RPSEA could seek out other national or international labs (Canada, Brazil, or Norway). A part of this cooperation should be work to fundamentally reduce drilling costs.

#### Finding #3

The Ultra-Deepwater Advisory Committee Report “Review of DOE/NETL – 2007/1283 – Ultra-Deepwater & Unconventional Gas 2007=2008 R&D Plan”, 3.2 Program Focus recommended under Finding #1 that “ the resource base of potential reserves related to Ultra-Deepwater Program be updated by the DOE/consortium in conjunction with other agencies and organizations”

#### Recommendation #3

We recommend this report be completed and published on NETL and RPSEA web site and made available to the public.

#### Finding #4

The Ultra-Deepwater Advisory Committee Report “Review of DOE/NETL – 2007/1283 – Ultra-Deepwater & Unconventional Gas 2007=2008 R&D Plan”, 3.2 Program Focus recommended under Finding #2 that “the number of themes to be addressed (by the RPSEA consortium program) should be based on a cost/benefit analysis.” If this was done, the results were not available to the committee.

Recommendation #4

The RPSEA consortium, with assistance from NETL, document a cost benefit analysis formula with each solicitation/project to facilitate better ranking the solicitations/projects for impact and program funding.

Finding #5

Although there are two identified met ocean projects in RPSEA's 2007 plan (global warming effects on hurricanes and better current predictions) neither have been contracted. Further, better wind and wave predictions are critical to advanced structural design necessary to drill and develop ultra **deepwater** projects.

Recommendation #5

We recommend that the met ocean program be strengthened to include better wind and wave predictions.

## **Attachment 3b**

### **Program Scope**

9<sup>th</sup> October UDAC subcommittee Judzis/Seamount/Wiencke      Draft Report

#### Overview

The subcommittee feels that the overall program scope covers the ultra-deep waters of the Gulf of Mexico adequately. Although in the definitions section of EPACT Subtitle J, Sec. 999 the term 'ultra-deepwater' means a water depth that is equal to or greater than 1,500 meters, the PROGRAM ELEMENTS ultra-deepwater architecture and technology includes drilling to formations in the Outer Continental Shelf to depths greater than 15,000 feet- which can be interpreted to formation depth only (not to water). So far, the program has concentrated on ultra-deepwater of the Gulf of Mexico.

Financial requirements to support ground-breaking new technology in ultra-deep waters are much larger than available funding. More leverage is needed to achieve the ambitious goals and overlapping or redundant work should be avoided. Thus, a look at international R&D programs and industrial collaboration is warranted.

And recently, there has been much political (including international) and industry interest and activity on the Arctic basins. The USGS estimates technically recoverable reserves of 90 billion BLS of oil and 1,669 TCF of gas in the entire offshore Arctic. In the portion of the Arctic OCS that the U.S. controls, the Chuckchi and Beaufort Seas off the North Slope of Alaska, the MMS estimates a mean of 9.35 billion BLS of economically recoverable oil assuming the low price of \$30 per BBL.

Some of the recommendations from the Program Focus subcommittee may be outside the current remit of RPSEA. However the subcommittee recognizes that technology and experience from deep water arenas other than the Gulf of Mexico could be valuable in securing energy for America.

#### Finding #1: Other petroleum provinces

Technology and the knowledge base needed to explore and exploit hydrocarbons in ultra-deep waters (within present UDAC scope) coincide to a large extent with those needed for developing other oil and gas provinces that will be of importance to the U.S, e.g. offshore, harsh metocean conditions, arctic and remote locations.

#### Recommendation

- Consider extending scope to other petroleum provinces.

#### Finding #2: Arctic

The technical and geologic challenges of the Arctic are somewhat different from and at least as challenging as those challenges in the Gulf of Mexico. They include ultra-extended well drilling, moving sea ice, ultra-remoteness, environmental concerns, oil spill risk on broken ice, etc. It is safe to assume that many of the wells drilled in the Arctic will surpass 15,000 feet in total depth.

#### Recommendation

- Recommend that RPSEA consider allocating some resources to the study of Arctic oil and gas exploration and development issues that are beyond industry's scope of activity. This region will probably become strategically and economically vitally important to the U.S. in the near future.

#### Finding #3: International deepwater R&D program collaboration

There exist programs outside of DeepStar that have elements that include 'exploration and production technologies'\* and 'new architectures for production'\* in ultra-deepwater. Examples include DEMO 2000 in Norway and Industry Technology Facilitator (ITF) in the United Kingdom. Some of the same companies involved in these programs are also active in U.S. deep waters.

\* Section 999H(d)(1)

#### Recommendations

- Enhance R&D project scope by reviewing applicable programs both in the US and international arena. This can be facilitated via ex-officio membership RPSEA's Ultra-Deepwater Program Advisory Committee or Technical Advisory Committees.
- Seek cooperation with similar programs internationally.

#### Finding #4: International deepwater industrial collaboration

Oil and gas operators and service industry in the U.S. work globally and do not limit their activity and technology base to U.S. waters and suppliers. For example the consortium 'West Africa Deepwater Operators' (WADO) has shared their experiences offshore for many years.

#### Recommendation

- Support industrial collaboration internationally. Seek the experience from other provinces and avoid overlapping or duplication of effort where possible.

## Attachment 3c

### Process Subcommittee

Subcommittee members: Kent Abadie, Joe Fowler, Paul Tranter, Luc Ikelle  
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Only one UDW award has been made so far by RPSEA. Our subcommittee finds this number of awards insufficient. The main thrust of our findings and recommendations is to see this number increase without compromising the quality of awards.

Finding 1:  
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It looks like RPSEA's communications (reporting, division of portfolios, feedback, etc.) with NETL is good. A similar impression is valid regarding the technical side of DOE. It seems like there are some issues between DOE legal and financial practices and RPSEA expectations, especially regarding UDW.

Recommendations:  
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1.1: The fact that the unconventional-resources and small-business components of the program are less affected by DOE legal and financial practices is an important lesson that UDW management must quickly learn.

1.2: Although the large/established oil/gas organizations may be willing to participate in and contribute to RPSEA deliberations, the subcommittee members feel that they will find it hard to allocate significant legal and technical resources to really be key players in the execution of RPSEA plans, especially in the early stages, when such allocations may be hard to justify, from their viewpoint. We believe that this observation is valid, irrespective of the economic cycle. RPSEA's possible best bets are:

- Startups
- Consortia
- Small R&D groups
- R&D joint ventures
- Academia
- ...

Basically, small entities, which need the resources, are likely to submit proposals to RPSEA that are central to their business. These types of groups generally have a couple of people who have dealt with government contracts in the past. Moreover, they need the RPSEA type of funding for their success and even survival and can easily make some of the necessary adjustments regarding these contracts. So we recommend that UDW management invite more such organizations to submit proposals.

1.3: We recommend that RPSEA also consider performing a survey of expected PIs which have not yet found it attractive to submit proposals to RPSEA. Such surveys may provide scientific reasons for the low responses to RFPs and may help RPSEA to design an appropriate way to increase responses to their UDW RFPs.

1.4.: Last year, we recommended that RPSEA clearly state in the RFPs the IP (patents, copyrights, etc.) rights of the PIs. We are very pleased to learn that IP rights do not seem to be an obstacle for PIs at this stage. However, we recommend that RPSEA continue to monitor this issue with increasing UDW awards.

Remark:

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The subcommittee discussed the idea of appointing an intermediary between RPSEA and NETL to assist in contract issues. We finally concluded that such an appointment can lead to many duplications of the tasks that RPSEA, NETL, and DOE staff are already doing well. So the subcommittee did not recommend the idea of appointing an intermediary between RPSEA and NETL to assist in contract issues.

Finding 2:

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Long-term R&D. The UDAC has expressed a desire for the ultra-deepwater program element to be primarily directed at long-term R&D that drives step change (i.e., "Grand Challenges") in the oil and gas industry relative to an increase in the ultra-deepwater resource base, and more important, conversion of identified resources into economically recoverable reserves. "Grand Challenges" are defined as transformational technologies which, if successfully developed, are capable of leapfrogging conventional pathways. Although RPSEA has earmarked certain RFPs as constituting "Grand Challenge" opportunities, the potential of the R&D projects remains unclear to the UDAC.

Recommendations:

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2.1. The list of selected proposals on pages 63 and 64 clearly shows short-term projects. We recommend that the 2009 list be more long-term.

2.2. RPSEA should clearly identify the potential merits of all R&D projects by determining the applicable production and/or reserve impact. In doing so, it will be more evident that the program funding is being appropriately directed to deliver the stated strategic program objectives. This should help assuage the concerns of the UDAC relative to the funneling process (i.e., 120+ projects narrowed to 26 projects) and the overall direction of the program element funding (i.e., step-change technology). The assessed impact of each R&D project should be used by RPSEA in charting the strategic direction of the program, serve as the foundation for R&D project-narrowing decisions, and finally, be a centerpiece of the solicitation/selection process.

2.3: The formulation of RFPs tends to be too technologically oriented. An effort must be made to make them appealing to a broad group of scientists and engineers. Progress has been made in the right direction, but more is needed.

Finding 3:

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Private-sector funding. Last year we recommended to RPSEA to seek additional funding from the private sector. They are already doing so with the fellowship/scholarship program, for example. We would like to see more effort in this direction, especially in the form of cost-sharing of some UDW proposals.

Again, the limited fiscal appropriation (<\$15M/annum) for conduct of R&D for the ultra-deepwater program element is a widespread concern of UDAC members. Recent requests for proposals (RFPs) issued by RPSEA assign a relative low weighting factor (<20%) to the commercial elements (includes cost share) considered in the award process. Consequently, the incentive for a respondent to offer greater than the minimum cost-share funding (20%) appears to be low. Moreover, the essential importance of ultra-deepwater technology development to our national-security interest in energy independence justifies greater resources being directed toward identification of additional funding sources to protect the vitality of the program.

Recommendation:

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3.1.: Instate a formal role for RPSEA to seek out private-sector funding support for the program that extends beyond the cost-share arrangement in the RFP process. Of course, RPSEA should take measures that will maximize the private-sector funding support of ultra-deepwater R&D

through the application of the RFP solicitation/award process. However, this obligation of RPSEA should be expanded to consolidate similar responses to RFPs, allowing joint R&D studies where the funding offers can be aggregated to surpass the minimum (20%) cost share. Further, RPSEA should search for private funding sources to support the ultra-deepwater program element. Expansion of private-sector funding would lead to further leveraging of public-sector funding and hence improve return on investment of the public funds dedicated to the program.

#### Finding 4

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On average, the contract negotiation/award cycle time is two times that of RPSEA/DOE projections. More important, potential performers are not responsive to RFPs, or they withdraw in the selection/award process due to contractual complexity. DOE advisors have concluded that R&D performers are providing goods and services and therefore must be governed by a complex procurement-style contract that provides for cost reimbursement.

#### Recommendation:

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4.1.: Further explore the possibility of offering greater flexibility in the contractual structure governing the performers' delivery of R&D. Perhaps a linkage to cost share could be examined. For example, establish cost-share tranches that correlate to procurement, cooperative research and grant commercial structures. Procurement contracts could be utilized for R&D cost share up to 50%. Cost-share proposals ranging from 50% to 75% may be considered to be collaborative R&D governed by cooperative research-type contracts. RFPs selected/awarded that exceed 75% of cost share could be delivered under a grant.

#### Finding 5:

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RPSEA seems to continue to solicitate project ideas along with their RFPs. While the concept of project ideas may have made some sense at the start of the program, it may turn out not to be very useful in the long run.

#### Recommendation:

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5.1. We propose combining requests for project ideas with RFPs or simply eliminating the UDW project idea proposal. A person (or organization) with a good idea about UDW must go ahead and submit a proposal.

Finding 6:

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Selection of proposals and award of proposals are two different things that RPSEA reports need to clarify (see pages 63 and 64).

Recommendation:

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6.1.: RPSEA reports need to clarify this point in accordance with the RPSEA procurement-process flow chart. Also, the whole idea of negotiation after a proposal has been selected is not described. An example would be useful.

Finding 7:

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Timing of funding. The subcommittee finds the objective of a 90-day process from solicitation to award interesting and supports it. Unfortunately, as of September 18, 2008, the process has taken almost a year for the one UDW award made so far.

Recommendation:

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7.1.: Do better planning and, if necessary, provide a more revised process to potentials PIs.

Finding 8:

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Process scorecards. Although we are still limited to one award, the RPSEA report will greatly benefit from graphic scorecards.

Recommendations:

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8.1.: We recommend that RPSEA develop graphics which describe the relationship between appropriated funds and award funds as a function of time (in years, for example).

8.2.: In more general terms, the assessments of process metrics or timing of funding is still too early, especially for UDW. More awards are needed for such assessments. So we may need a standing committee here.

Finding 9:

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The fellowship/scholarship idea is very good. Also it is well implemented, according to newsletters. RPSEA internships are also a good idea. However, we need to learn more about the implementation, especially if RPSEA has a very small staff. Hence RPSEA members may find it challenging to add student supervision to their current duties.

Recommendation:

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9.1.: RPSEA may want to advertise these programs more.

## **Attachment 3d**

### **Subgroup on Program Progress & Value**

#### SUB GROUP MEMBERS:

Quenton Dokken

Paul Cicio

Dan Daulton

Rick Mitchell

#### Finding #1: Value and benefit of the program

With only one project award (DW1201 Wax Control- University of Utah) having completed the process (project kickoff meeting between DeepStar/RPSEA and University of Utah - Sept 2008) it is difficult to identify the value and benefit of the program from a quantitative prospective due to the lack of tangible data associates with project(s) progress. As this project as well as other pending project awards moves into implementation DeepStar/REPSA project management will provide summary of project as per REPSA Draft Annual Plan – dated July 2008 Chapter 7 item B “Monitoring and Reporting Program Management Performance and Budget Metrics”. The major items to be reported upon are:

- 1) Obligation/uncosted funding in relation to the total fund
- 2) Earned value assessment for each research project including individual project costs and schedules.
- 3) Project completion targets (within budget and project period)

Along with monitoring specific project status by RPSEA the administrator of Title IX, subtitle J, Section 999 of Energy Policy Act of 2005, National Energy Technology Laboratory (NETL) has committed to development of “Program Benefits Assessment” methodology which includes four primary objectives:

- 1) Accurate characterization of the full suite of benefits to be assessed,
- 2) Define reasonably accurate methods of quantifying these benefits as they accrue or for estimating how they might likely accrue in the future,
- 3) Produce benefits assessments considered valid and reasonable by a panel of knowledgeable experts,
- 4) Be capable of estimating increases in federal royalty receipts resulting from the R&D program

The status of this “Program Benefits Assessment” is under development. According to Department of Energy memorandum dated April 9, 2008 from James Slutz (Acting Principle Deputy Assistant Secretary Office of Fossil Fuels to Steven Isakowitz Chief Financial Officer a plan is in place to create an assessment vehicle based upon National Research Council (NRC)

committee study in 2001 which developed a “methodology framework for estimating benefits”. With assistance from the Oak Ridge Energy Lab the framework was discussed with respect to application to the DOE Subtitle J, Section 999 Consortium R&D Program. Significant milestones were laid out in the memorandum and which appear to satisfy the objective of capturing benefits of the program as required.

Recommendations:

- We recommend that NETL produce a current status of the “Program Benefits Assessment” progress and future status reports be conducted on a quarterly bases
- We recommend that RPSEA produce a current status of Monitoring and Reporting Program Management Performance and Budget Metrics”, and submit status reports to NETL on a quarterly bases.
- These status reports should be available to the public thru the “Technology Transfer” vehicles available by NETL and RPSEA (i.e., web sites, public mailers, etc).

Finding #2: Program Metrics

According the EAct 2005 – Title IX, Subtitle J, Section 999B (e) Annual Plan items (A), (B), (C) the Ultra Deepwater program metrics are being captured with respect to the solicitations, submissions of recommendations, consultation, publications are being complied with and well documented.

According the EAct 2005 – Title IX, Subtitle J, Section 999B (f) Awards, items (j) the Ultra Deepwater Program is being well managed by the primary contractor RPSEA with good oversight by National Energy Technology Lab (NETL) as required.

Additionally this sub group finds that EAct 2005 – Title IX, Subtitle J, Section 999C and 999D additional award requirements and Advisory Committee oversight are being well executed.

Recommendations:

- The sub group suggests that the funding percentage for Ultra Deepwater projects as defined in EAct 2005 – Title IX, Subtitle J, Section 999H at 35% of the annual award of \$US 50,000,000 or \$US @ 15,000,000, may be insufficient to support costly and time consuming ultra deepwater development for two reasons:
  - 1) A single well program in ultra deepwater may cost the operator \$US 100,000,000. The extreme conditions of ultra-deepwater require cutting edge technologies that can take many years to develop and progress to commerciality and reliability.
  - 2) RPSEA 2008 and 2009 Annual Draft Plan Ultra Deepwater solicitations for projects are estimated at a value of \$US 30,000,000. The cost of equipment, materials, testing, and technological verification of such projects will be significant due to the extreme conditions under which this projects must operate.

For these reasons we suggest the funding appropriations for Ultra Deepwater be

- Increased from \$US 50,000,000 to \$US 87,000,000 by the Department of Interior and Congress. .

### Findings #3: Monitoring and measuring progress

- The sub group suggests that RPSEA and NETL produce a quarterly executive summary document using a simple table format for layman or non technical oriented readers that measures the progress regarding the Ultra Deepwater program for the public, Congressional staffers, Legislative and Executive branches, Department of Interior and Department of Energy. The summary should contain at minimum, the follow:
  - Reference year of funding allocation
  - Number of projects solicited
  - Number of project awarded
  - Value of the award
  - Project name and affiliate (university, private sector company, etc)
  - Projected start and completion dates
  - Value to the Ultra Deepwater program (estimated by Benefits Assessment)
  - Projected additional federal royalty for the project
  - Potential jobs created

### Finding #4: Extension of the Ultra Deepwater Program

- The United States of America is importing over \$US 700,000,000 in oil and gas. Programs such as EAct 2005 – Title IX, Subtitle J, Section 999 are absolutely necessary to support growing energy independence while also benefiting our nation by reducing the federal deficit due to increased royalty collections.

Federal royalties are collected from the operators which fund Section 999. It is to the benefit of the federal and State governments, their citizen and the oil and gas operators to utilize technology derived from programs such as these for energy security. This EAct 2005 – Title IX, Subtitle J, Section 999 was enacted with a 10 years life span through



2017. The Ultra-Deepwater Lower Tertiary, (see map) which currently includes 12 fields, potentially 100-200+ wells, and state of the art production facilities is just beginning to take shape, lead by Shell and partners Chevron and BP in the Predido Belt (Great White Tobago and Silver Tip fields), Chevron and partners Devon Energy, StatoilHydro, Eni and Petrobras Amercias in the Jack/St Malo fields and Petrobras Americas with partners Devon and Total in the Cascade/Chinook fields. Full development plans are proposed for most ultra deepwater programs beginning in 2010-2015 and extending through 2017, depending upon the market, rig availability and enabling technologies.

Recommendation:

- It is the recommendation of the subgroup that consideration be made to further extension of the program additional 10 years, or through 2027 to support further research and development associated with aging ultra deepwater producers, well intervention, decommissioning and eventual plug and abandonment in a safe and environmentally considerate manner.



## **Attachment 3e**

### **Comments of the “Societal Impact” Workgroup**

#### **REGARDING THE 2009 DRAFT PLAN**

Mary Jane Wilson

Stephen Sears

Paul Cicio

Quenton Dokken

October 9, 2009

Finding #1: The Draft Plan does not have a clear definition of Safety and Environmental needs for ultra deepwater development. The Plan recommends assessing the safety and environmental impact of UDW funded projects, but not on the overall safety or environmental impact of ultra deepwater development. The two areas of study, metocean understanding and discharge of produced water, are two of many possible topics that could be supported. It is not apparent why these two are the ones selected at this point.

Page 27; D. Implementation Plan; DeepStar and Advisory Committee Roles in the UDW; Table 4.1: UDW TACs: “Environmental Safety & Regulatory” and “Metocean” are identified as separate technical advisory committees. But, on Page 41; Need 6: Associated Safety and Environmental Concerns; Metocean is combined with Environmental and Safety concerns. This confusion is repeated on Page 37; DW 1801 (2007); Effect of Global Warming on Hurricane Activity; DW 2810 (2008); Gulf three Dimensional Operational Current Model Pilot; the activities proposed are most applicable to operational strategies to protect the infrastructure. Addressing safety issues (i.e. environmental threats to the infrastructure) is clearly different than addressing environmental issues (i.e. infrastructure and operations threats to the natural environment).

Recommendation #1: Separate Safety projects from Environmental Projects. The technology, impact and societal impacts of these two areas are very different. The safety and environmental associated with ultra deepwater development also vary greatly with the different phases of the EP lifecycle: Find, Develop, Produce, Abandon. It is recommended that which part of the lifecycle a safety or environmental research project will benefit be defined. Funding projects which address the overall impact of ultra

deepwater development, not just the impact of projects funded by this plan, should also be considered.

Clearly define "Safety Concerns" and "Environmental Concerns." Do not confuse these very important aspects of technology development or diminish their importance by lumping them into one element.

Finding #2: The draft plan for 2009, and the selected projects for 2008, includes funding for studies of the impact of hurricanes on global warming and on metocean understanding. These areas of study presumably benefit from substantial NOAA and other government funding, and the additional money provided by this program for such studies would be relatively small in comparison. However, the funds are a significant part of the overall Ultra Deepwater program. It is not clear how the additional dollars provided by this program will produce significant incremental results to other government funded programs.

Recommendation #2: Require that funding programs on atmospheric or oceanic research clearly demonstrate a benefit to ultra deepwater development, not merely augmenting research already funded by other government agencies. Define the specific gap that this research is intended to address.

Finding #3: The benefits of the UDW program are not adequately described.

Recommendation #3: There are multiple benefits of this research for consumers, the economy and national security. A robust, diverse and affordable supply of energy is essential for economic growth and quality of life as we know it. All government studies show that given economic growth, more energy will be required.

This program does high risk long term research that if not done with the help of federal funding, it too expensive and long term to be done by any one company in the oil and gas industry. This program is strategic because it can potentially create break thru technology that will open new areas of the deep water offshore areas to tremendous hydrocarbon resources. To the extent that technology will increase domestic production and reduce dependency upon imports from less stable countries is enormous contribution to national security. Reducing imports reduces the federal debt.

Regardless of whether the consumer is a homeowner, farmer or manufacturer, affordability of energy is crucial. High energy costs increases the cost of food, heating bills and gasoline for every American. For US manufacturers, high energy costs means it may not be competitive and threatens high paying jobs. Unfortunately, since 2000, over 20 percent or 3.3 million manufacturing jobs have been lost and high relative energy costs have significantly contributed.

Finding #4: P 11; Chapter 2 Strategic Overview; The Environment: Strong statement about minimizing/mitigating negative environmental impact, but no direction as to how environmental impact will be “evaluated”. This is repeated on page 26, Long Term, Objective 5; right sentiment, but not direction as to how it will be accomplished.

Recommendation #4: Define strategies for assessing and monitoring potential environmental impact. Develop a detailed document describing what is known and not known about the ecology of ultra deep water environments, what oil/gas exploration, drilling, and production activities could potentially impact environmental quality, productivity, and sustainability.

## Attachment 4a

### R&D Program Focus Subcommittee

The subcommittee evaluated the 2007, 2008, and 2009 programs together since several projects are multiyear and related.

First, the subcommittee is pleased that many of the recommendations from previous committee work seems to have been implemented. The RPSEA Ultra Deepwater program concentrates on five major needs:

1. Drilling, Completions, and Interventions Breakthroughs-
2. Appraisal & Development Geosciences and Reservoir Engineering
3. Significantly Extend Subsea Tieback Distances/Surface Host Elimination
4. Dry Trees/Direct Well Intervention and Risers in 10,000 Ft Water Depth
5. Continuous Improvement/Optimize Field Development
6. Associated Safety and Environmental Concerns

The Ultra-Deepwater research program is broken down as follows:

Need	2007 Projects	2007 Funding	2008 Projects	2008 Funding	2009 Projects	2009 Funding
1	1	\$200K	4	\$5495K		\$6250K
2	2	\$3600K	1	400K		\$1500K
3	5	\$6182K	3	6871K		\$3625K
4	4	\$1540K	0	0		0
5	4	\$600K	1	128K		\$3000K
6	1	0	1	1248K		\$500K
Total	16	12,122K	10	\$14,142K	5-10	\$14,875K

Previous comments of this committee that drilling research should be enhanced, that there were too many projects, and that more emphasis was needed on breakthrough and fundamental research seems to have been heard by RPSEA.

RPSEA further delineated the projects into subcategories within the six major categories listed above in their "August Draft Plan, 2009 Annual Plan for Ultra-Deepwater and Unconventional

Natural Gas and Other Petroleum Resources Research and Development Program: Section E 2007 and 2008 UDW Status". The follow table captures the proposed projects for 2007 and 2008 and planned solicitations for 2009 to facilitate a comparison of the program to date.

Project Subcategory	Projects in 2007	Projects in 2008	Solicitations areas planned in 2009
Drilling and Completions	1	2	* Drilling and Completion
Intervention D/H	0	2	* Intervention
Appraisal	1	1	* Res. Surveillance
Development	1	0	None
Flow	1	2	*Stable Flow
Subsea Power	2	1	None
Subsea Processing	2	0	*Processing, Pressure boosting and Instrumentation
Dry Tree – direct Intervention riser	3	0	None
Ops and Inspection	0	1	*Inspection, sensor tools, bridging contingencies
Graduate Students and Long Term R&D	4	1**	*LTR&D
Safety and Environment	1	1	*Environmental issues
Total projects	16	11	5-10 planned

\*designates planned solicitations for 2009

\*\*Project DW 2601 reported as a project but accounted for in the RPSEA funding report

At first glance the project subcategories appear to be well balanced with stronger interest in graduate student, long term research and development and dry tree intervention. The balanced approached appears to be sustained with the planned solicitations in 2009.

Beyond subsea processing and subsea power, it is difficult to determine if any of the projects are considered “breakthrough projects”. However the intent of the long term R&D programs (DW2601-2008) we believe is to identify potential “breakthrough projects”. The process of identifying “breakthrough projects” with long term research may warrant further explanation regarding methodology/analysis and reporting to ensure the research is focused on true areas of long and short term benefit to ultra-deepwater.

Further analysis of the National Energy Technology Laboratory (NETL) Complementary Program projects find limited impact upon Ultra-Deepwater technologies based upon “August 2008 draft - 2009 Annual Plan for the Ultra-Deepwater and Unconventional Natural Gas and Other Petroleum Resources Research and Development Program – Executive Summary”. Three projects are listed:

- 1) HPHT Drilling – Ultra Deep Single Cutter Drilling Simulator (deeper 25,000 ft)
- 2) Environmental impact – inventory air shed contaminants, plume monitoring from unmanned aircraft, 3-D mapping and development of air quality models
- 3) Environmental impact of release/assessment of/production potential related to methane hydrates.

Although the NETL has responsibility for administering the program, perhaps the vast resources of NETL could work more closely with the consortium projects owners to facilitate/support joint development of solutions to the 27 soon to be over 35 projects associated with the consortium efforts as directed by RPSEA. Coordination will be necessary between the primary contractor RPSEA, subcontractors and NETL in order to identify those projects which NETL can immediately impact in order to accelerate project findings, conclusions and commercialization of new technologies. We think this would better serve the EAct 2005, Title IX, Subtitle J, Section 999A (a) which states that, “The Secretary shall carry out a program under this subtitle of research, development, demonstration, and commercial application of technologies for ultra-deepwater.....”. Leveraging NETL’s vast lab and technical staff to collaborate on the consortium Ultra-Deepwater projects we believe will ultimately provide more rapid development of ultra-deepwater resources, enhancing our national security, improving federal royalties and reduce our national debt.

Finding #1 **Move to PROCESS**

The fact that only one research project has been awarded and contracted so work may begin has seriously hampered the process of directing research budgets appropriately. There is no way to know the relative future promise of an area until the first steps have been taken.

Recommendation # 1 **Move to PROCESS**

Greatly intensify the efforts to get projects awarded and underway. This is of paramount importance for the support of the program.

Finding #2 **Move to PROCESS**

The Ultra-Deepwater technologies gaps appear to be well documented by the RPSEA consortium efforts and a balanced approach to technology needs and funding is demonstrated. However, the Complementary Program managed by NETL appears to be heavily leveraged in the drilling area for Ultra-Deepwater (Simulator project) with little to no impact in the remaining 5 categories or 9 subcategories recommended by the consortium managed by RPSEA. Additionally NETL complementary Program appears to be strongly oriented toward the “unconventional oil and natural gas and other petroleum resource R&D”.

Further, the previously identified need to reduce drilling costs for the deepwater seems to have been addressed by RPSEA projects to develop extended reach drilling. This could reduce the number of wells, but we see little research to fundamentally improve drilling efficiency and reduce costs associated with ultra deepwater projects.

Recommendation #2 Move **to PROCESS**

NETL should review not only the projects submitted by RPSEA as program administrator, but also identify NETL resources with expertise in appropriate fields, which are available to work with RPSEA consortium subcontractors to help solve the technical issue at hand. We believe cooperation between these groups could more rapidly bring these technologies to commercialization. If NETL does not have the resources to help, perhaps RPSEA could seek out other national or international labs (Canada, Brazil, or Norway). A part of this cooperation should be work to fundamentally reduce drilling costs.

Finding #3 **Move to PROGRAM PROGRESS AND VALUE**

The Ultra-Deepwater Advisory Committee Report “Review of DOE/NETL – 2007/1283 – Ultra-Deepwater & Unconventional Gas 2007=2008 R&D Plan”, 3.2 Program Focus recommended under Finding #1 that “ the resource base of potential reserves related to Ultra-Deepwater Program be updated by the DOE/consortium in conjunction with other agencies and organizations”

Recommendation #3 **Move to PROGRAM PROGRESS AND VALUE**

We recommend this report be completed and published on NETL and RPSEA web site and made available to the public.

Finding #4

The UDAC is in general agreement with the first five needs that have been identified and the criteria that are being used to make selections (Need 6 needs to be clarified relative to the

definitions of “safety” versus “environment”, which is addressed elsewhere in the report). But we recognize that the project selections are what ultimately define the Program focus.

#### Recommendation #4

Because these project selections are of critical importance, it is important that there be documentation as to the project impact analysis utilized in the project selection process, and that it be made public. The Committee recommends that this documentation be made available to the UDAC.

#### Finding #5

The Draft Plan does not have a clear definition of Safety and Environmental needs for ultra deepwater development. The Plan recommends assessing the safety and environmental impact of UDW funded projects, but not on the overall safety or environmental impact of ultra deepwater development. The two areas of study, metocean understanding and discharge of produced water, are two of many possible topics that could be supported. It is not apparent why these two are the ones selected at this point. Addressing safety issues (i.e. environmental threats to the infrastructure) is clearly different than addressing environmental issues (i.e. infrastructure and operations threats to the natural environment).

Recommendation #5.1: Funding projects which address the overall impact of ultra deepwater development, not just the impact of projects funded by this plan, should also be considered.

Recommendation #5.2: Separate Safety projects from Environmental Projects. The technology, impact and societal impacts of these two areas are very different. The safety and environmental associated with ultra deepwater development also vary greatly with the different phases of the EP lifecycle: Find, Develop, Produce, Abandon. It is recommended that which part of the lifecycle a safety or environmental research project will benefit be defined. Clearly define “Safety Concerns” and “Environmental Concerns.” Do not confuse these very important aspects of technology development or diminish their importance by lumping them into one element.

#### Finding 6

The met ocean projects in the Program’s 2007-2008 plans focus on global warming effects on hurricanes and better current predictions. Better wind and wave predictions are critical to safe, advanced structural design necessary to drill and develop ultra **deepwater** projects.

Recommendation #6: Under the Safety category, the met ocean program should be strengthened to include better wind and wave predictions.

Finding 7: **EDIT OUT WITH INFO FROM SOCIETAL REPORT**



When we look at the R&D projects that have been solicited and selected, there are none that address the biological and ecological impacts of UDW development.

Recommendation 7:

The Environmental category needs to focus on studies that address the biological and ecological impacts, both positive and negative, of UDW development.

## **Attachment 4b**

### **Program Scope**

9<sup>th</sup> October UDAC subcommittee Judzis/Seamount/Wiencke      Draft Report

#### Overview

The subcommittee feels that the overall program scope covers the ultra-deep waters of the Gulf of Mexico adequately. Although in the definitions section of EPACT Subtitle J, Sec. 999 the term 'ultra-deepwater' means a water depth that is equal to or greater than 1,500 meters, the PROGRAM ELEMENTS ultra-deepwater architecture and technology includes drilling to formations in the Outer Continental Shelf to depths greater than 15,000 feet- which can be interpreted to formation depth only (not to water). So far, the program has concentrated on ultra-deepwater of the Gulf of Mexico.

Financial requirements to support ground-breaking new technology in ultra-deep waters are much larger than available funding. More leverage is needed to achieve the ambitious goals and overlapping or redundant work should be avoided. Thus, a look at international R&D programs and industrial collaboration is warranted.

And recently, there has been much political (including international) and industry interest and activity on the Arctic basins. The USGS estimates technically recoverable reserves of 90 billion BLS of oil and 1,669 TCF of gas in the entire offshore Arctic. In the portion of the Arctic OCS that the U.S. controls, the Chuckchi and Beaufort Seas off the North Slope of Alaska, the MMS estimates a mean of 9.35 billion BLS of economically recoverable oil assuming the low price of \$30 per BBL.

Some of the recommendations from the Program Focus subcommittee may be outside the current remit or funding of the Program. However the subcommittee recognizes that technology and experience from deep water arenas other than the Gulf of Mexico could be valuable in securing energy for America.

#### Finding #1: Other petroleum provinces

Technology and the knowledge base needed to explore and exploit hydrocarbons in ultra-deep waters (within present UDAC scope) coincide to a large extent with those needed for developing other oil and gas provinces that will be of importance to the U.S, e.g. offshore, harsh metocean conditions, arctic and remote locations.

The technical and geologic challenges of the Arctic are somewhat different from and at least as challenging as those challenges in the Gulf of Mexico. They include ultra-extended well drilling, moving sea ice, ultra-remoteness, environmental concerns, oil spill risk on broken ice, etc. It is safe to assume that many of the wells drilled in the Arctic will surpass 15,000 feet in total depth.

This region will probably become strategically and economically vitally important to the U.S. in the near future.

#### Recommendation 1.1

- Consider extending the Program's scope to other petroleum provinces within the definition of EPOA 2005 (e.g., Arctic) and undertake technology development to maximize the supply of domestic oil and gas. Caution should be exercised to avoid diluting available funds in a way that impacts the total size of projects.

#### Finding #2: International deepwater R&D program collaboration

There exist programs outside of DeepStar that have elements that include 'exploration and production technologies'\* and 'new architectures for production'\* in ultra-deepwater. Examples include DEMO 2000 in Norway (\$500 MM total funding from 1999 to 2008), Brazil and Industry Technology Facilitator (ITF) in the United Kingdom. Some of the same companies involved in these programs are also active in U.S. deep waters.

Oil and gas operators and service industry in the U.S. work globally and do not limit their activity and technology base to U.S. waters and suppliers. For example the consortium 'West Africa Deepwater Operators' (WADO) has shared their experiences offshore for many years.

\* **Section 999H(d)(1) check this!**

#### Recommendation 2

- Enhance R&D project scope by reviewing applicable programs both in the US and international arena, seeking cooperation with similar programs internationally.
- Support industrial collaboration internationally. Seek the experience from other provinces and avoid overlapping or duplication of effort where possible.

## Attachment 4c

### Process Subcommittee

Subcommittee members: Kent Abadie, Joe Fowler, Paul Tranter, Luc Ikelle

Only one UDW award has been made so far by RPSEA.

Our subcommittee finds this number of awards insufficient.

The main thrust of our findings and recommendations is to see this number increase without compromising the quality of awards.

1.4.: Last year, we recommended that RPSEA clearly state in the RFPs the IP (patents, copyrights, etc.) rights of the PIs. We are very pleased to learn that IP rights do not seem to be an obstacle for PIs at this stage. However, we recommend that RPSEA continue to monitor this issue with increasing UDW awards. **KEEP IN RECOMMENDATIONS**

Finding 2: **MOVE TO PROGRAM FOCUS**

Long-term R&D. The UDAC has expressed a desire for the ultra-deepwater program element to be primarily directed at long-term R&D that drives step change (i.e., "Grand Challenges") in the oil and gas industry relative to an increase in the ultra-deepwater resource base, and more important, conversion of identified resources into economically recoverable reserves. "Grand Challenges" are defined as transformational technologies which, if successfully developed, are capable of leapfrogging conventional pathways. Although RPSEA has earmarked certain RFPs as constituting "Grand Challenge" opportunities, the potential of the R&D projects remains unclear to the UDAC.

Recommendations: **MOVE TO PROGRAM FOCUS**

2.1. The list of selected proposals on pages 63 and 64 clearly shows **short-term** projects. We recommend that the 2009 list be more **long-term**.

2.2. **TEST AGAINST FIRST FOCUS REC.** RPSEA should clearly identify the potential merits of all R&D projects by determining the applicable production and/or reserve impact. In doing so, it will be more evident that the program funding is being appropriately directed to deliver the stated strategic program objectives. This should help assuage the concerns of the UDAC relative to the funneling process (i.e., 120+ projects narrowed to 26 projects) and the overall direction of the program element funding (i.e., step-change technology). The assessed impact of each R&D project should be used by RPSEA in charting the strategic direction of the program, serve as the foundation for R&D project- narrowing decisions, and finally, be a centerpiece of the solicitation/selection process.

2.3: The formulation of RFPs tends to be too technologically oriented. An effort must be made to make them appealing to a broad group of scientists and engineers. Progress has been made in the right direction, but more is needed. **WILL DEVELOP A FINDING THAT REFERENCES EARLIER UDAC RECOMMENDATIONS AND RECOMMEND THAT THEY CONTINUE TO PROCEED IN ACCORDANCE WITH THEM**

Finding 3:

Private-sector funding. Last year we recommended to RPSEA to seek additional funding from the private sector. They are already doing so with the fellowship/scholarship program, for example. We would like to see more effort in this direction, especially in the form of cost-sharing of some UDW proposals.

Again, the limited fiscal appropriation (<\$15M/annum) for conduct of R&D for the ultra-deepwater program element is a widespread concern of UDAC members. Recent requests for proposals (RFPs) issued by RPSEA assign a relative low weighting factor (<20%) to the commercial elements (includes cost share) considered in the award process. Consequently, the incentive for a respondent to offer greater than the minimum cost-share funding (20%) appears to be low. Moreover, the essential importance of ultra-deepwater technology development to our national-security interest in energy independence justifies greater resources being directed toward identification of additional funding sources to protect the vitality of the program.

**ADD REFERENCE TO OTHERS MODELS DISCUSSED IN THIS FINDING**

Recommendation:

3.1.: Instate a formal role for RPSEA to seek out private-sector funding support for the program that extends beyond the cost-share arrangement in the RFP process. Of course, RPSEA should take measures that will maximize the private-sector funding support of ultra-deepwater R&D through the application of the RFP solicitation/award process. However, this obligation of RPSEA should be expanded to consolidate similar responses to RFPs, allowing joint R&D studies where the funding offers can be aggregated to surpass the minimum (20%) cost share. Further, RPSEA should search for private funding sources to support the ultra-deepwater program element. Expansion of private-sector funding would lead to further leveraging of public-sector funding and hence improve return on investment of the public funds dedicated to the program.

**NEW FINDING 4 (COMBINE FINDINGS AND RECOMMENDATIONS BELOW)**

Finding #1

The fact that only one research project has been awarded and contracted so work may begin has seriously hampered the process of directing research budgets appropriately. There is no way to know the relative future promise of an area until the first steps have been taken.

Recommendation # 1

Greatly intensify the efforts to get projects awarded and underway. This is of paramount importance for the support of the program.

Finding 7:

Timing of funding. The subcommittee finds the objective of a 90-day process from solicitation to award interesting and supports it. Unfortunately, as of September 18, 2008, the process has taken almost a year for the one UDW award made so far. **RECOGNIZE STREAMLINING EFFORT**

Recommendation:

7.1.: Do better planning and, if necessary, provide a more revised process to potentials PIs.

Finding 1:

It looks like RPSEA's communications (reporting, division of portfolios, feedback, etc.) with NETL is good. A similar impression is valid regarding the technical side of DOE. It seems like there are some issues between DOE legal and financial practices and RPSEA expectations, especially regarding UDW.

Recommendations:

1.1: The fact that the unconventional-resources and small-business components of the program are less affected by DOE legal and financial practices is an important lesson that UDW management must quickly learn. **RPSEA should look more closely at the success of the Unconventional Program and apply the learnings to the UDW Program.**

1.2: Although the large/established oil/gas organizations may be willing to participate in and contribute to RPSEA deliberations, the subcommittee members feel that they will find it hard to allocate significant legal and technical resources to really be key players in the execution of RPSEA plans, especially in the early stages, when such allocations may be hard to justify, from their viewpoint. We believe that this observation is valid, irrespective of the economic cycle. RPSEA's possible best bets are:

- Startups
- Consortia
- Small R&D groups
- R&D joint ventures
- Academia

Basically, small entities, which need the resources, are likely to submit proposals to RPSEA that are central to their business. These types of groups generally have a couple of people who have dealt with government contracts in the past. Moreover, they need the RPSEA type of funding for their success and even survival and can easily make some of the necessary adjustments regarding these contracts. So we recommend that UDW management invite more such organizations to submit proposals.

1.3: We recommend that RPSEA also consider performing a survey of expected PIs which have not yet found it attractive to submit proposals to RPSEA. Such surveys may provide scientific reasons for the low responses to RFPs and may help RPSEA to design an appropriate way to increase responses to their UDW RFPs.

#### Finding 4

On average, the contract negotiation/award cycle time is two times that of RPSEA/DOE projections. More important, potential performers are not responsive to RFPs, or they withdraw in the selection/award process due to contractual complexity. DOE advisors have concluded that R&D performers are providing goods and services and therefore must be governed by a complex procurement-style contract that provides for cost reimbursement.

#### Recommendation:

4.1.: Further explore the possibility of offering greater flexibility in the contractual structure governing the performers' delivery of R&D. Perhaps a linkage to cost share could be examined. For example, establish cost-share tranches that correlate to procurement, cooperative research and grant commercial structures. Procurement contracts could be utilized for R&D cost share up to 50%. Cost-share proposals ranging from 50% to 75% may be considered to be collaborative R&D governed by cooperative research-type contracts. RFPs selected/awarded that exceed 75% of cost share could be delivered under a grant.

#### Finding **Moved to PROCESS from FOCUS**

The Ultra-Deepwater technologies gaps appear to be well documented by the RPSEA consortium efforts and a balanced approach to technology needs and funding is demonstrated. However, the Complementary Program managed by NETL appears to be heavily leveraged in the drilling area for Ultra-Deepwater (Simulator project) with little to no impact in the remaining 5 categories or 9 subcategories recommended by the consortium managed by RPSEA. Additionally NETL complementary Program appears to be strongly oriented toward the "unconventional oil and natural gas and other petroleum resource R&D".

Further, the previously identified need to reduce drilling costs for the deepwater seems to have been addressed by RPSEA projects to develop extended reach drilling. This could reduce the number of wells, but we see little research to fundamentally improve drilling efficiency and reduce costs associated with ultra deepwater projects.

#### Recommendation **Moved to PROCESS from FOCUS**

NETL should review not only the projects submitted by RPSEA as program administrator, but also identify NETL resources with expertise in appropriate fields, which are available to work with RPSEA consortium subcontractors to help solve the technical issue at hand. We believe cooperation between these groups could more rapidly bring these technologies to commercialization. If NETL does not have the resources to help, perhaps RPSEA could seek out other national or international labs (Canada, Brazil, or Norway). A part of this cooperation should be work to fundamentally reduce drilling costs.

**END OF 4**

Finding 6: **SET ASIDE (RPSEA MAKE NOTE)**

Selection of proposals and award of proposals are two different things that RPSEA reports need to clarify (see pages 63 and 64).

Recommendation:

6.1.: RPSEA reports need to clarify this point in accordance with the RPSEA procurement-process flow chart. Also, the whole idea of negotiation after a proposal has been selected is not described. An example would be useful.

Finding 8: **MOVE TO PROGRESS AND VALUE**

Process scorecards. Although we are still limited to one award, the RPSEA report will greatly benefit from graphic scorecards.

Recommendations:

8.1.: We recommend that RPSEA develop graphics which describe the relationship between appropriated funds and award funds as a function of time (in years, for example).

8.2.: In more general terms, the assessments of process metrics or timing of funding is still too early, especially for UDW. More awards are needed for such assessments. So we may need a standing committee here.

Finding 9: **MOVE TO SOCIETAL IMPACTS AN REWRITE AT HIGHER LEVEL**

The fellowship/scholarship idea is very good. Also it is well implemented, according to newsletters. RPSEA internships are also a good idea. However, we need to learn more about the implementation, especially if RPSEA has a very small staff. Hence RPSEA members may find it challenging to add student supervision to their current duties.

Because the industry is shorthanded, nurturing and training people is important.

Recommendation:

9.1.: RPSEA may want to advertise these programs more.



## **Attachment 4d**

### **Subgroup on Program Progress & Value**

#### SUB GROUP MEMBERS:

Quenton Dokken

Paul Cicio

Dan Daulton

Rick Mitchell

#### PROGRAM PROGRESS AND VALUE

##### Finding #1: Value and benefit of the program

With only one project award (DW1201 Wax Control- University of Utah) having completed the process (project kickoff meeting between DeepStar/RPSEA and University of Utah - Sept 2008) it is difficult to identify the value and benefit of the program from a quantitative prospective due to the lack of tangible data associates with project(s) progress. As this project as well as other pending project awards moves into implementation DeepStar/REPSA project management will provide summary of project as per REPSA Draft Annual Plan – dated July 2008 Chapter 7 item B “Monitoring and Reporting Program Management Performance and Budget Metrics”. The major items to be reported upon are:

- 4) Obligation/uncosted funding in relation to the total fund
- 5) Earned value assessment for each research project including individual project costs and schedules.
- 6) Project completion targets (within budget and project period)

Along with monitoring specific project status by RPSEA the administrator of Title IX, subtitle J, Section 999 of Energy Policy Act of 2005, National Energy Technology Laboratory (NETL) has committed to development of “Program Benefits Assessment” methodology which includes four primary objectives:

- 5) Accurate characterization of the full suite of benefits to be assessed,
- 6) Define reasonably accurate methods of quantifying these benefits as they accrue or for estimating how they might likely accrue in the future,
- 7) Produce benefits assessments considered valid and reasonable by a panel of knowledgeable experts,
- 8) Be capable of estimating increases in federal royalty receipts resulting from the R&D program

The status of this “Program Benefits Assessment” is under development. According to Department of Energy memorandum dated April 9, 2008 from James Slutz (Acting Principle Deputy Assistant Secretary Office of Fossil Fuels to Steven Isakowitz Chief Financial Officer a plan is in place to create an assessment vehicle based upon National Research Council (NRC)

committee study in 2001 which developed a “methodology framework for estimating benefits”. With assistance from the Oak Ridge Energy Lab the framework was discussed with respect to application to the DOE Subtitle J, Section 999 Consortium R&D Program. Significant milestones were laid out in the memorandum and which appear to satisfy the objective of capturing benefits of the program as required.

Recommendations:

- **MOVE TITLE TO FINDING** We recommend that the Program produce a current status of the “Program Benefits Assessment” progress and future status reports be conducted on a quarterly bases
- **MOVE TITLE TO FINDING** We recommend that the Program produce a current status of Monitoring and Reporting Program Management Performance and Budget Metrics”, and submit status reports to NETL on a quarterly bases.
- **MAKE THIS THE ONLY RECOMMENDATION** These status reports should be available to the public thru the “Technology Transfer” vehicles available by NETL and RPSEA (i.e., web sites, public mailers, etc).

Finding #2: Program Metrics

According the EAct 2005 – Title IX, Subtitle J, Section 999B (e) Annual Plan items (A), (B), (C) the Ultra Deepwater program metrics are being captured with respect to the solicitations, submissions of recommendations, consultation, publications are being complied with and well documented.

According the EAct 2005 – Title IX, Subtitle J, Section 999B (f) Awards, items (j) the Ultra Deepwater Program is being well managed by the primary contractor RPSEA with good oversight by National Energy Technology Lab (NETL) as required.

Additionally this sub group finds that EAct 2005 – Title IX, Subtitle J, Section 999C and 999D additional award requirements and Advisory Committee oversight are being well executed.

Recommendations:

- The sub group suggests that the funding percentage for Ultra Deepwater projects as defined in EAct 2005 – Title IX, Subtitle J, Section 999H at 35% of the annual award of \$US 50,000,000 or \$US @ 15,000,000, may be insufficient to support costly and time consuming ultra deepwater development for two reasons:
  - 1) A single well program in ultra deepwater may cost the operator \$US 100,000,000. The extreme conditions of ultra-deepwater require cutting edge technologies that can take many years to develop and progress to commerciality and reliability.
  - 2) RPSEA 2008 and 2009 Annual Draft Plan Ultra Deepwater solicitations for projects are estimated at a value of \$US 30,000,000. The cost of equipment, materials, testing, and technological verification of such projects will be significant due to the extreme conditions under which this projects must operate.

**Temper language to relate offshore costs to expense of research**

For these reasons we suggest the funding appropriations for Ultra Deepwater be

- Increased from \$US 50,000,000 to \$US 87,000,000 by the Department of Interior and Congress. Reduce specificity and recommend activation of appropriation authority under EAct 2005; make point that as the program matures demo projects will be necessary and the costs will increase.

#### Findings #3: Monitoring and measuring progress

- The sub group suggests that RPSEA and NETL produce a quarterly executive summary document using a simple table format for layman or non technical oriented readers that measures the progress regarding the Ultra Deepwater program for the public, Congressional staffers, Legislative and Executive branches, Department of Interior and Department of Energy. The summary could contain, with appropriate text and graphics, the following:
  - Reference year of funding allocation
  - Number of projects solicited
  - Number of project awarded
  - Value of the award
  - Project name and affiliate (university, private sector company, etc)
  - Projected start and completion dates
  - Value to the Ultra Deepwater program (estimated by Benefits Assessment)
  - Projected additional federal royalty for the project
  - Potential jobs created

#### Finding #4: Extension of the Ultra Deepwater Program

- The United States of America is importing over \$US 700,000,000,000 in oil and gas. Programs such as EAct 2005 – Title IX, Subtitle J, Section 999 are absolutely necessary to support growing energy independence while also benefiting our nation by reducing the federal deficit due to increased royalty collections.

Federal royalties are collected from the operators which fund Section 999. It is to the benefit of the federal and State governments, their citizen and the oil and gas operators to utilize technology derived from programs such as these for energy security. This EAct 2005 – Title IX, Subtitle J, Section 999 was enacted with a 10 years life span through



2017. The Ultra-Deepwater Lower Tertiary, (see map) which currently includes 12 fields, potentially 100-200+ wells, and state of the art production facilities is just beginning to take shape, lead by Shell and partners Chevron and BP in the Predido Belt (Great White Tobago and Silver Tip fields), Chevron and partners Devon Energy, StatoilHydro, Eni and Petrobras Amercias in the Jack/St Malo fields and Petrobras Americas with partners

Devon and Total in the Cascade/Chinook fields. Full development plans are proposed for most ultra deepwater programs beginning in 2010-2015 and extending through 2017, depending upon the market, rig availability and enabling technologies.

Recommendation: **COVER IN TRANSMITTAL LETTER. WORD IN A MANNER THAT DOES NOT ASK FOR EXTENSION BUT IDS LONG TERM NEED**

- It is the recommendation of the subgroup that consideration be made to further extension of the program additional 10 years, or through 2027 to support further research and development associated with aging ultra deepwater producers, well intervention, decommissioning and eventual plug and abandonment in a safe and environmentally considerate manner.

Finding #3 **MOVED FROM FOCUS REDUNDANT OMIT**

The Ultra-Deepwater Advisory Committee Report “Review of DOE/NETL – 2007/1283 – Ultra-Deepwater & Unconventional Gas 2007=2008 R&D Plan”, 3.2 Program Focus recommended under Finding #1 that “ the resource base of potential reserves related to Ultra-Deepwater Program be updated by the DOE/consortium in conjunction with other agencies and organizations”

Recommendation #3 **MOVED FROM FOCUS**

We recommend this report be completed and published on NETL and RPSEA web site and made available to the public.

## Attachment 4e

### Comments of the “Societal Impact” Workgroup

#### REGARDING THE 2009 DRAFT PLAN

Mary Jane Wilson

Stephen Sears

Paul Cicio

Quenton Dokken

October 9, 2009

Finding #1: **MOVED TO R&D FOCUS (now in two Recommendations)**

The Draft Plan does not have a clear definition of Safety and Environmental needs for ultra deepwater development. The Plan recommends assessing the safety and environmental impact of UDW funded projects, but not on the overall safety or environmental impact of ultra deepwater development. The two areas of study, metocean understanding and discharge of produced water, are two of many possible topics that could be supported. It is not apparent why these two are the ones selected at this point.

Page 27; D. Implementation Plan; DeepStar and Advisory Committee Roles in the UDW; Table 4.1: UDW TACs: “Environmental Safety & Regulatory” and “Metocean” are identified as separate technical advisory committees. But, on Page 41; Need 6: Associated Safety and Environmental Concerns; Metocean is combined with Environmental and Safety concerns. This confusion is repeated on Page 37; DW 1801 (2007); Effect of Global Warming on Hurricane Activity; DW 2810 (2008); Gulf three Dimensional Operational Current Model Pilot; the activities proposed are most applicable to operational strategies to protect the infrastructure. Addressing safety issues (i.e. environmental threats to the infrastructure) is clearly different than addressing environmental issues (i.e. infrastructure and operations threats to the natural environment).

Recommendation #1: **MOVED TO R&D FOCUS** Separate Safety projects from Environmental Projects. The technology, impact and societal impacts of these two areas are very different. The safety and environmental associated with ultra deepwater development also vary greatly with the different phases of the EP lifecycle: Find, Develop, Produce, Abandon. It is recommended that which part of the lifecycle a safety or environmental

research project will benefit be defined. Funding projects which address the overall impact of ultra deepwater development, not just the impact of projects funded by this plan, should also be considered.

Clearly define "Safety Concerns" and "Environmental Concerns." Do not confuse these very important aspects of technology development or diminish their importance by lumping them into one element.

Finding #2: The draft plan for 2009, and the selected projects for 2008, includes funding for studies of the impact of global warming on hurricanes and on metocean understanding. These areas of study presumably benefit from substantial NOAA and other government funding, and the additional money provided by this program for such studies would be relatively small in comparison. However, the funds are a significant part of the overall Ultra Deepwater program. It is not clear how the additional dollars provided by this program will produce significant incremental results to other government funded programs.

Recommendation #2: Require that funding programs on atmospheric or oceanic research clearly demonstrate a benefit to ultra deepwater development, not merely augmenting research already funded by other government agencies. Define the specific gap that this research is intended to address.

Finding #3: The benefits of the UDW program are not adequately described. **MOVE INTO INTRODUCTION OF PROGRAM PROGRESS AND VALUE**

Recommendation #3: There are multiple benefits of this research for consumers, the economy and national security. A robust, diverse and affordable supply of energy is essential for economic growth and quality of life as we know it. All government studies show that given economic growth, more energy will be required.

This program does high risk long term research that if not done with the help of federal funding, it too expensive and long term to be done by any one company in the oil and gas industry. This program is strategic because it can potentially create break thru technology that will open new areas of the deep water offshore areas to tremendous hydrocarbon resources. To the extent that technology will increase domestic production and reduce dependency upon imports from less stable countries is enormous contribution to national security. Reducing imports reduces the federal debt.

Regardless of whether the consumer is a homeowner, farmer or manufacturer, affordability of energy is crucial. High energy costs increases the cost of food, heating bills and gasoline for every American. For US manufacturers, high energy costs means it may not be competitive and threatens high paying jobs. Unfortunately, since 2000, over 20 percent or 3.3 million manufacturing jobs have been lost and high relative energy costs have significantly contributed.

Finding #4: P 11; Chapter 2 Strategic Overview; The Environment: Strong statement about minimizing/mitigating negative environmental impact, but no direction as to how environmental impact will be “evaluated”. This is repeated on page 26, Long Term, Objective 5; right sentiment, but not direction as to how it will be accomplished.

Recommendation #4: Define strategies for assessing and monitoring potential environmental impact, both positive and negative. Develop a detailed document describing what is known and not known about the ecology of ultra deep water environments, what oil/gas exploration, drilling, and production activities could potentially impact environmental quality, productivity, and sustainability.

Finding **MOVED TO SOCIETAL IMPACTS FROM PROCESS. REWRITE AT HIGHER LEVEL**

The fellowship/scholarship idea is very good. Also it is well implemented, according to newsletters. RPSEA internships are also a good idea. However, we need to learn more about the implementation, especially if RPSEA has a very small staff. Hence RPSEA members may find it challenging to add student supervision to their current duties.

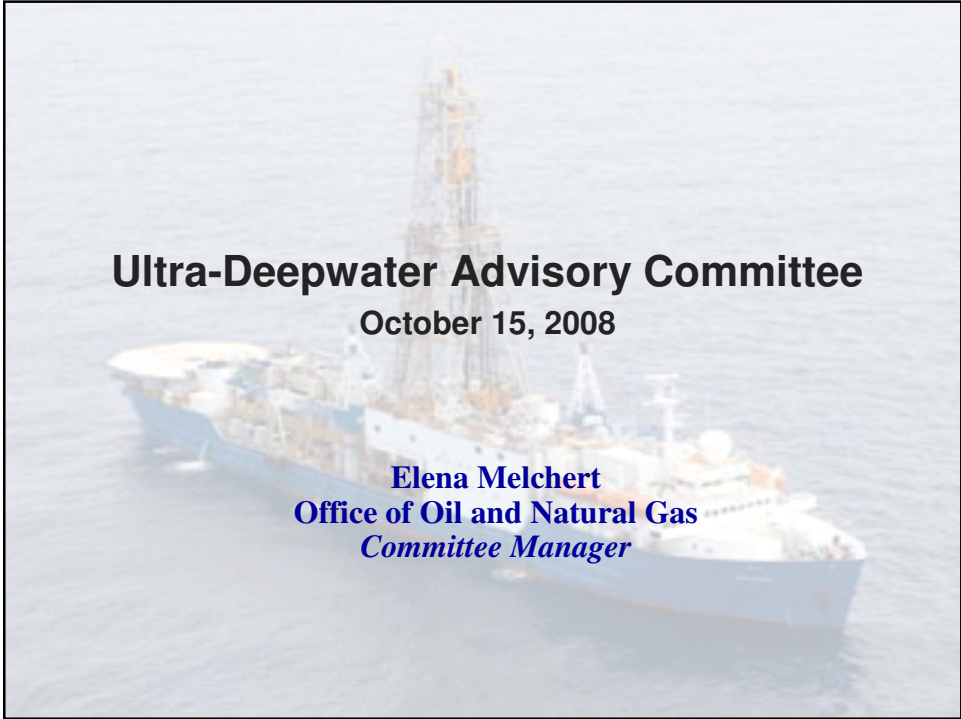
Because the industry is shorthanded, nurturing and training people is important.

Recommendation:

9.1.: RPSEA may want to advertise these programs more.

**Attachment 5**





## Ultra-Deepwater Advisory Committee

October 15, 2008

**Elena Melchert**  
**Office of Oil and Natural Gas**  
*Committee Manager*



## Ultra-Deepwater Advisory Committee

- **8<sup>th</sup> Meeting of the UDAC**
- **October 23, 2008, 10am – 12pm EDT**
  - Conference Call/WebEx
  - Participation Instructions
- **Draft Agenda**
  - Vote: final Committee Report of Recommendations
  - Committee Calendar: Nov. 2008 – Aug. 2010