DEEPSTAR VIII PROJECT
MEETING NOTES

PLACE: Chevron **DATE: April 10, 2007** **TIME: 8:00 AM**

SUBJECT: 8400 (RPSEA 1400) – Floating Systems Committee Meeting Minutes – CTR Review Meeting

DISTRIBUTION: DeepStar 8400/RPSEA 1400 Committee Members and Attendees

ITEM	SUBJECT	ACTION

1. CTR Presentations and Discussions

Attachment 1 includes a list of all CTRs presented and discussed during the day. The complete package of CTRs will be sent out as a separate item. Attachment 2 includes the presentations given. Note that not all CTRs included a PowerPoint presentation. Instead, these were discussed based on the CTR.

In total, 46 CTRs were presented. Some of these were referred to other committees as shown in the table in Attachment 1. Many of the CTRs do not yet have champions. Champions will have to be identified before the CTRs can be considered further.

ACTION, April 25

There was a lot of commonality among CTRs in several groups as follows:

- VIV and mitigation (7)
- Fatigue and crack detection (8)
- Dry tree semi and tensioners (9)
- Composite risers (3)

The champions for CTRs within each group should discuss the CTRs and combine, modify or eliminate CTRs as appropriate. Having multiple competing CTRs will dilute the voting such that neither may receive sufficient votes for funding.

ACTION, May 4

2. Schedule

Short listing of CTRs (combine like CTRs, eliminate those w/o Champions)	May 4
Ranking of CTRs	May 9 - May 23
Ranked CTRs to management committee	May 25

RECORDED BY: Paul Devlin

ITEM	SUBJECT	ACTION

DEEPSTAR PHASE VIII
8400 COMMITTEE MEETING ATTENDANCE REGISTER
DATE: April 10, 2007 TIME: 08:00 AM VENUE: Chevron – Houston, Texas

DeepStar 8400 Floating Systems
RPSEA CTR Review Meeting
April 10, 2007

FIRST NAME	LAST NAME	COMPANY	SIGNATURE
Rajiv	Aggarwal	Granherne	
David	Anderson	Granherne	
Ray	Ayers	Stress Engineering	
Hugh	Barron	BP	
Gail	Baxter	Marathon	
Pierre	Beynet	BP	
Shankar	Bhat	Shell	
Paulo	Biasotto	Bureau Veritas	
John	Chianis	Houston Offshore	
Jim	Chitwood	Chevron/DeepStar	
Jin-Sug	Chung	Technip USA	
Yiannis	Constantinides	Chevron	
Paul	Devlin	Chevron	
Michel	Dib	WorleyParsons Sea	

ITEM	SUBJECT	ACTION

DeepStar 8400 Floating Systems
RPSEA CTR Review Meeting
April 10, 2007

FIRST NAME	LAST NAME	COMPANY	SIGNATURE
Hatem	Elgamiel	Noble Corporation	
Jie	Fang	INTEC Engineering	
Tony	Garzione	RPSEA	
Rupak	Ghosh	BP	
Mike	Grecco	Chevron	
Bill	Greiner	Granherne	
Himanshu	Gupta	BP	
Christopher	Haver	Chevron	
Jon	Husby	Aker-Kvaerner	
Afzal	Hussain	DNV	
Merin	Karayaka	Chevron	
Andrew	Kilner	AMOG Consulting	
Steinar	Kristoffersen	Statoil	

ITEM	SUBJECT	ACTION

DeepStar 8400 Floating Systems
RPSEA CTR Review Meeting
April 10, 2007

FIRST NAME	LAST NAME	COMPANY	SIGNATURE
Ming-yao	Lee	Chevron	
Jean-Luc	Legras	Acergy US, Inc.	
Steven	Leverette	Atlantia	
Genshen	Liu	Aker-Kvaerner	
Hira	Lo	Shell	
Wei	Na	Chevron	
Nick	Markov	Offshore Model Basin	M. Markov
Drew	Natalamaki	Champion Technologies	
Richard	Mercier	OTRC	Rich Mercier
Chris	Nungall	Grankerne	
John	Murray	FloaTEC	
Roberto	Noce	Moss Maritime	

ITEM	SUBJECT	ACTION

DeepStar 8400 Floating Systems
RPSEA CTR Review Meeting
April 10, 2007

FIRST NAME	LAST NAME	COMPANY	SIGNATURE
Arnt	Clufsen	Statoil	
Nicolas	Parsloe	DORIS Engineering	
Ma:	Podskarbi	2-H Offshore	
Stein	Rasmussen	Aker Kvaerner	
Rick	Rogers	GlobalSantaFe	
Jean-Francois	Salmi-Marcoux	Acergy US, Inc.	
Art	Schroeder	RPSEA	
Kjell	Skeugstel	Statoil	
Giri	Sreenivasan	Chevron	
Michael	Templin	Technip, USA	
Ricky	Thethi	2-H Offshore	
Michael	Tognarelli	BP	
Bruce	Urband	Grant Prideco	

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DeepStar 8400 Floating Systems
RPSEA CTR Review Meeting
April 10, 2007

FIRST NAME	LAST NAME	COMPANY	SIGNATURE
Tom	Walsh	Shell	
Don	Wang	Chevron	
Leiv	Wanvik	Aker-Kvaerner	
Skip	Ward	INTEC Engineering	
Mason	Wu	Acergy US, Inc.	
Chunfa	Wu	WorleyParsons Sea	
Jun	Xu	Marintek	
Jim	Yu	WorleyParsons Sea	
Jane	Zhang	Shell	
Rong	Zhao	Marintek	
Harry	Zonker	Alcoa	

RECORDED BY: Paul Devlin

ITEM	SUBJECT	ACTION

DeepStar 8400 Floating Systems
RPSEA CTR Review Meeting
April 10, 2007

FIRST NAME	LAST NAME	COMPANY	E-MAIL	SIGNATURE
~~Bruce~~	~~Beynet~~	~~BP~~	~~Bruce.Beynet@bp.com~~	
Amin	Radi	VGTCO	amin.radi@vetco.com	
Roger	Lu	Aker Kvaerner	roger.lu@akerkvaerner.com	
~~Bill~~	Todd	Technip	WTODD@TECHNIP.com	
~~Bruce~~	~~Anderson~~	~~Exxon~~		
RAY	FALES	BV	RAY.FALES@MS.BUREAUVERITAS.com	
John	Allen	Vetco/GE	john.allen@vetco.com	
Satish	Nagarajaiah	Rice	nagarajaiah@rice.edu	
MUTHU	CHEZHIAN	DNV	Muthu.Chezhian@dnv.com	
Jun	Chao	Aker	Jun.Chao@Akerkvaerner.com	
BAL	DHAMI	TOTAL	baljit.dhami@total.com	
Qi	Xu	Technip	qxu@technip.com	
Shyam	Kumar	Technip	Sskumar@technip.com	
Lixin	Xu	Technip	Lxu@technip.com	
Kostas	Lambrakos	Technip	KLambrakos@technip.com	

RECORDED BY: Paul Devlin

Chevron
1600 Smith St., Rm. 33016C
Houston, TX 77002
P.O. Box 4368
Houston, TX 77210-4368
Telephone (713) 754-4530
Facsimile (713) 754-4568

8400 Floating Systems Committee
RPSEA CTR Review Meeting

Date: **Tuesday, April 10, 2007**
Time: **7:45 a.m. – 4:00 p.m.**
Location: **Chevron Sugar Land Facility, Auditorium**

AGENDA

7:45	Coffee & Continental Breakfast	
8:00	Introduction	P. Devlin
8:15	CTR Presentations	ALL
10:00	Break	
10:30	CTR Presentations (con't)	ALL
11:30	Lunch	
12:15	CTR Presentations (con't)	ALL
2:00	Break	
3:30	Wrap Up Discussions	
4:00	Adjourn	

NOTE: Meeting length depends on number of CTR's proposed. Please allow at least until 4pm.

Chevron
1600 Smith St., Rm. 33016C
Houston, TX 77002
P.O. Box 4368
Houston, TX 77210-4368
Telephone (713) 754-4530
Facsimile (713) 754-4568

8400 Floating Systems Committee
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NOTE: Meeting length depends on number of CTR's proposed. Please allow at least until 4pm.

DeepStar 8400/RPSEA 1400 CTR Review Meeting Attendance List, April 10, 2007

First Name	Last Name	Company	Phone	Email	Attended
Vidar	Aaneslandvaa	Advanced Production and Loading (APL)	999-999-9999	vaa@apl.no	
Rajiv	Aggarwal	Granherne	713 753 5430	Rajiv.Aggarwal@kbr.com	X
Rex	Alfonso	Fluor	281-263-3530	rex.alfonso@fluor.com	
John	Allen	Vetco	713-894-1102	john.allen@vetco.com	X
Luiz Henrique Moraes	Alves	Petrobras	55 21 3865 4951	lhma@petrobras.com.br	
Torgrim	Andersen	SeaFlex Riser Technology	832-444-2299	torgrim.andersen@seaflex.com	
David	Andersen	Granherne		David.Andersen@bp.com	X
Ron	Araujo	Anadarko	832-636-1373	Ron.Araujo@anadarko.com	
Ray	Ayers	Stress Engineering	281-955-2900	ray.ayers@stress.com	
Jagdeep	Bakshi	Teekay Navion Shuttle Tankers	604 844 6628	jagdeep.bakshi@teekay.com	
Hugh	Banon	BP	281-366-5039	banonhh@bp.com	
Gail	Baxter	Marathon	713-296-3321	gdbaxter@marathonoil.com	X
Steve	Beach	RPSEA	281-313-9555	sbeach@rpsea.org	
Mick	Bell	Heerema	281-880-1624	mbell@hmc-heerema.com	
Mathieu	Beunier	Saipem SA	+33 1 61 37 74 09	mathieu.beunier@saipem-sa.com	
Pierre	Beynet	BP	281-366-7068	beynetpa@bp.com	X
Shankar	Bhat	Shell		Shankar.Bhat@Shell.Com	X
Paulo	Biasotto	Bureau Veritas	281-986-1305	paulo.biasotto@us.bureauveritas.com	
Greg	Biggerstaff	Anadarko	281-673-6554	gregory.biggerstaff@anadarko.com	
Francis	Biolley	Institut Francais Du Petrole	33-1-47-527-195	francis.biolley@ifp.fr	
Marco	Bortolotto	ENI/Agip	39 02 520 62504	marco.bortolotto@agip.it	
Fikry	Botros	BP	281-366-5914	botrosfr@bp.com	
Laurent	Bouquier	Total	33 5 59 83 69 51	Laurent.BOUQUIER@total.com	
Jim	Brekke	GlobalSantaFe	281-925-6676	Jim.Brekke@GlobalSantaFe.com	
Massimo	Camatti	GE Oil & Gas			
Cuneyt	Capanoglu	I.D.E.A.S.	650-259-7997	cuneyt@ideas-engineering.com	
Walter	Chapman	Rice University		wgchap@rice.edu	
Jen-Hwa	Chen	Chevron	832-854-2094	jenc@chevron.com	
John	Chianis	Houston Offshore		jchianis@houston-offshore.com	
Jim E.	Chitwood	Chevron/DeepStar	713-754-4513	JimChitwood@chevron.com	X
Jin-Sug	Chung	Technip USA	281-249-8759	jchung@technip.com	X

Craig	Colby	DNV	281-721-6826	craig.colby@dnv.com	
Yiannis	Constantinides	Chevron	832-854-2144	ycon@chevron.com	X
Howard	Cook	BP	281 366 2938	howard.cook2@bp.com	
Ton	Coppens	Heerema	281-880-1600	tcoppens@hmc-heerema.com	
Cyril	Cordeau	Saipem SA	33 1 61 37 85 36	Cyril.cordeau@saipem-sa.com	
Antonio	Corte	Petrobras	713-917-3787	acorte@petrobras-usa.com	
Anna	Costa	Petrobras	+55 213865 4934	ana.costa@petrobras.com.br	
Alvaro Maia	Da Costa	Petrobras	(55 21) 3865-6272	amcta@petrobras.com.br	
Gianluca	De Molli	ENI/Agip	39 02 520 61256	gianluca.demolli@eni.it	
Mauro Costa	De Oliveira	Petrobras	55 21 3865 4956	mauro@petrobras.com.br	
Paul	Devlin	Chevron	832-854-2127	pauldevlin@chevron.com	X
Bal	Dhami	Total	713-647-3504	Baljit.DHAMI@total.com	X
Michel	Dib	Worleyparsons Sea	281-206-8412	mdib@sea-engr.com	X
Richard	D'Souza	Granherne	713-753-3139	Richard.D'Souza@kbr.com	
Christine	Economides	TAMU	979-458-0797	cee@economidesconsultants.com	
Hatem	Elgamiel	Noble Corporation	281-276-6278	helgamiel@noblecorp.com	
Ray	Fales	Bureau Veritas	281-986-1316	ray.fales@us.bureauveritas.com	X
Jie	Fang	INTEC	281-925-2221	jie.fang@intecengineering.com	
Stephen	Farley	Noble Drilling Services	281-276-6635	sfarley@noblecorp.com	
Timothy	Finnigan	Chevron	925-842-8006	TimFinnigan@chevron.com	
Ricardo	Franciss	Petrobras	55 21 3865 6857	franciss@petrobras.com.br	
Ravi	Gadnagi	GE Oil & Gas			
Mike	Gann	Anadarko	832-636-3103	mike.gann@anadarko.com	
Shawn	Gao	Champion Technologies Company	281-710-9598	Shawn.Gao@CHAMP-TECH.com	
Dave	Garrett	Stress Engineering Services	281-955-2900	david.garrett@stress.com	
Tony	Garzione	RPSEA		tgarzione@rpsea.org	X
Joe	Gebara	Technip USA	281-870-1111	jgebara@technip.com	
Andrea	Genesio	ENI/Agip	39 02 520 62865	andrea.genesio@agip.it	
Rupak	Ghosh	BP		Rupak.Ghosh@bp.com	
Bob	Gordan	Stress Engineering		bob.gordon@stress.com	
Peter	Gorf	BP	+44 (0)1932 774804	peter.gorf@uk.bp.com	
Mike	Grecco	Chevron	713-754-4539	mgrecco@chevron.com	X
Bill	Greiner	Granherne	713-753-5644	bill.greiner@kbr.com	
Victor	Grinius	Offshore Model Basin	760-737-8850	vgrinius@modelbasin.com	

Paolo	Guaita	ENI/Agip	+44 (0)20 8326 5000	p.guaita@agipkco.com	
Himanshu	Gupta	BP	281-366-3235	himanshu.gupta@bp.com	X
Rune	Haakonsen	Kongsberg Maritime, Inc.	713-934-8885 x 107	rune.haakonsen@seaflex.no	
Roger	Hagen	Teekay Navion Shuttle Tankers	47 5144 2789	Roger.hagen@teekay.com	
Bob	Haley	Trelleborg CRP	713-800-6309	bhaley@trelleborg.com	
Henrik	Hannus	Aker-Kvaerner	713-270-2706	henrik.hannus@akerkvaerner.com	
Vigleik	Hansen	DNV	281-721-6805	vigleik.hansen@dnv.com	
Bryan	Hartman	Petrobras	281-546-9580	bhartman.ARCAN@petrobras-usa.com	
Rich	Haut	Houston Advanced Research Center	281-364-6093	rhaut@harc.edu	
Christopher	Haver	Chevron	713-754-4522	chaver@chevron.com	X
Kevin	Haverty	Aker-Kvaerner	713-596-4430	kevin.haverty@akerkvaerner.com	
Kjell	Helgoy	Teekay Navion Shuttle Tankers	+47 95250837	kjell.helgoy@teekay.com	
Jan Roger	Hellerud	Kongsberg Maritime, Inc.	713-934-8885	jan.roger.hellerud@kongsberg.com	
Richard (Dick)	Herman	Stress Engineering Services	281-890-7059	dick.herman@stress.com	
Jon	Holvik	Kongsberg Maritime, Inc.	713-934-8885 x 107	jon.holvik@kongsberg.com	
Ken	Huang	ABS Americas	281-877-6640	khuang@eagle.org	
Edward	Huang	Sea Engineering, Inc.	281-579-9700	ehuang@sea-engr.com	
Jon	Husby	Aker-Kvaerner	713-272-4194	jon.husby@akerkvaerner.com	X
Afzal	Hussain	DNV		Afzal.Hussain@dnv.com	
Mehernosh	Irani	BP	281-366-1224	mehernosh.irani@bp.com	
Paul	Jacob	MMI Engineering, Inc.	281-920-4600	pjacob@mmiengineering.com	
Richard	James	BP	+44 1932 774820	richard.james@uk.bp.com	
Philippe	Jean-jean	BP	281-249-1686	jeanjeph@bp.com	
Alf Reidar	Johansen	Hydro	011-47-2253-8116	alf.reidar.johansen@hydro.com	
Jens	Kaalstad	Advanced Production and Loading (APL)	281-293-7711	jpk@apl.no	
Dave	Kalinowski	I.D.E.A.S.	281 650-3144	davek@ideas-engineering.com	
Metin	Karayaka	Chevron	832-854-2121	karayaka@chevron.com	
Svein	Karlsen	Marintek	281-754-7291	svein.karlsen@marintek.sintef.no	
Amit	Katarya	Atlantia	281-898-6076	amit.katarya@sbmimodco.com	
Harold	Keys	Noble Corporation	218-276-6193	hkeys@noblecorp.com	
Andrew	Kilner	AMOG Consulting	713 964 2601	andrew_kilner@amogconsulting.com	X
Kerry	Kirkland	Stress Engineering		kerry.kirkland@stress.com	
Jason	Kirksey	Chevron	832-854-3878	krks@chevron.com	
Jafar	Korloo	Chevron	832-854-5917	jkorloo@chevron.com	

Vasanth	Kothnur	GE Global Research			
Steinar	Kristoffersen	Statoil		stekr@statoil.com	X
Santhosh	Kumar Mony	DNV	(281) 721-6608	santhosh.kumar@dnv.com	
Reza	Langari	TAMU	979-845-6918	rlangari@tamu.edu	
Cedric	Le Cunff	Principia	713-871-8900	principia@brs-houston.com	
Terry	Lechinger	Stress Engineering Services	281-955-2900	terry.lechinger@stress.com	
Ming-yao	Lee	Chevron	832-854-2116	leem@chevron.com	X
Richard	Leeuwenburgh	Bluewater Energy Services		richard.leeuwenburgh@bluewater.com	
Jean-Luc	Legras	Acergy US Inc	713-300-6550	jean-luc.legras@acergy-group.com	X
Steven	Leverette	Atlantia	281-899-4431	sleverette@atlantia.com	
David	Lewis	Blade Energy Partners	972-712-8407	dlewis@blade-energy.com	
Cesar de Souza	Lima	Petrobras	55-21-3865-6294	cesarlima@petrobras.com.br	
Tuanjie	Liu	ABS Americas	281-877-5864	tliu@eagle.org	
Genshen	Liu	Aker-Kvaerner	(713)414-3391	Gengshen.liu@akerkvaerner.com	X
Him	Lo	Shell		KingHim.Lo@shell.com	X
Rolf	Loken	Aker-Kvaerner	713-270-2735	rolf.loken@akerkvaerner.com	
Yong	Luo	Atlantia	281-848-6076	yong.luo@sbmimodco.com	
Wei	Ma	Chevron		mwei@chevron.com	
Kai-tung	Ma	Chevron	832-854-2114	kma@chevron.com	
Ken	Malloy	Stress Engineering		kmalloy@mohreng.com	
Nick	Markov	Offshore Model Basin	760-737-8850	nmarkov@modelbasin.com	X
Craig	Masson	Petrobras	713-808-3097	cmasson.INTEC@petrobras-usa.com	
Carlos	Mastrangelo	Petrobras	713 917-3700	mastrangelo@petrobras-usa.com	
Drew	Matalamaki	Champion Technologies Company	281-431-3636	Drew.Matalamaki@CHAMP-TECH.com	
Jay	Mattern	Exmar Offshore Company	281-679-3911	jmattern@exmaroffshore.com	
Judy	Mazzagatti	Chevron	713-754-4530	JNOJ@chevron.com	
Harvey	McBee	Sea Engineering, Inc.	281-206-8472	hmcbee@sea-engr.com	
Julie	McNeil	Chevron	(281) 658-0497	jmsu@chevron.com	
Sid	Mebarkia	Chevron	832-854-4761	smeb@chevron.com	
Trond S	Meling	Statoil	47 91191533	tsmeling@statoil.com	
Richard	Mercier	OTRC		rmercier@civil.tamu.edu	X
Chuck	Miller	Stress Engineering		chuck.miller@stress.com	
Bill	Miller	Stress Engineering Services	281-955-2909	bill.miller@stress.com	
Tom	Moran	Chevron	+358 040 503-0217	TMoran@chevron.com	

Chris	Mungall	Granherne	713 753-5880	chris.mungall@kbr.com	
John	Murray	FloaTEC	281-870-5746	jmurray@floatec.com	X
Greg	Myers	Integrated Ocean Drilling Program - Management International	202-465-7505	gmyers@iodp.org	
Satish	Nagarajaiah	Rice University		nagaraja@rice.edu	X
Kristin	Nedrelid	Statoil	47 90977949	krine@statoil.com	
Roberto	Noce	Moss Maritime	281-552-5699	roberto.noce@mossww.com	X
Magne	Nygard	Aker-Kvaerner	713-270-3119	Magne.Nygard@AkerKvaerner.com	
Owen	Oakley	Chevron	925-842-4953	ohoakley@chevron.com	
Arnt	Olufsen	Statoil	713 918 8251	AROL@statoil.com	X
Roger	Osborne	Pegasus International	713 465 5777	rosborne@pegasus-International.com	
Jim	O'Sullivan	Technip			
Bala	Padmanabhan	Mentor Subsea Technology Services, Inc.	281-870-5997	bpadmanabhan@mcdermott.com	
Emery	Panosh	Sea Engineering, Inc.	281-579-9700	epanosh@sea-engr.com	
Nicolas	Parsloe	DORIS		nparsloe@doris-inc.com	X
Dave	Petruska	BP	281-366-0988	petrusdj@bp.com	
Bob	Pilko	Blade Energy Partners	281-206-2000	bpilko@blade-energy.com	
Roberto	Piva	ENI/Agip	+39 02 520 62597	roberto.piva@agip.it	
Mat	Podskarbi	2-H Offshore		podskarm@2hoffshoreinc.com	X
Nikolaos	Politis	BP	281-366-7191	nikolaos.politis@bp.com	
Jack	Pollack	Atlantia	281-899-4490	jack.pollack@sbmimodco.com	
Neal	Prescott	Fluor	281-263-3361	neal.prescott@fluor.com	
Stein	Rasmussen	Aker Kvaerner	713-272-4199	Stein.Rasmussen@akerkvaerner.com	X
Philippe	Remacle	Total	713-647-3563	philippe.remacle@total.com	
Orlando Jose Soares	Ribeiro	Petrobras	713-917-3703	orlandor@petrobras-usa.com	
Rick	Rogers	GlobalSantaFe		Rick.Rogers@GlobalSantaFe.com	X
Jean-Francois	Saint-Marcoux	Acergy US Inc	713-430-1100	jean-francois.saint-marcoux@acergy-group.com	
Wilfredo	Salas	ENI/Agip	218 21 3335135 x 224	wilfredo.salas@enioil.com.ly	
Art	Schroeder	RPSEA		art@EnergyValley.net	X
Shawn	Searle	Oceanic Consulting	709-722-9060	shawn_searle@oceaniccorp.com	
Roy	Shilling	BP	281-366-0908	Roy.Shilling@bp.com	
Steven	Shu	Technip USA	281-249-8781	sshu@technip.com	
Fateh	Sihota	Mentor Subsea Technology Services, Inc.	281 870 5513	FSihota@mcdermott.com	
Sharon	Simkins	Champion Technologies Company	281-431-3676	Sharon.Simkins@CHAMP-TECH.com	
Kjetil	Skaugset	Statoil	47 95053189	kjska@statoil.com	X

Steve	Smith	Chevron	832-854-2191	sjss@chevron.com	
Julian	Soles	GlobalSantaFe	281-925-6681	julian.soles@gsfdrill.com	
Luiz Fernando	Souza	Petrobras	713-808-2640	lsouza@petrobras-usa.com	
Don	Spencer	Oceanic Consulting	709-722-9060	don_spencer@oceaniccorp.com	
Giri	Sreenivasan	Chevron		girisreenivasan@chevron.com	X
Yves	Stassen	Saipem SA	33 1 61 37 87 91	Yves.stassen@saipem-sa.com	
Joseph	Swenson	Fluor	281-263-6851	Joseph.Swenson@fluor.com	
Andy	Sworn	BP	+44 1932 774824	sworna@bp.com	
Michael	Templin	Technip USA	281/249-7456	MTemplin@technip.com	X
Ricky	Thethi	2-H Offshore	281-258-2000	thethir@2hoffshoreinc.com	
David	Thomas	Chevron	832-854-5381	David.Thomas@chevron.com	
Alex	Tischendorf	Teekay Navion Shuttle Tankers	281 822 7441	Alex.Tischendorf@teekay.com	
Bill	Todd	Technip USA	281 249 7979	wtodd@technip.com	X
Michael	Tognarelli	BP	281-366-8937	Michael.Tognarelli@bp.com	X
Odd Kenneth	Tollefsen	Teekay Navion Shuttle Tankers	+47 95250795	oddkenneth.tollefsen@teekay.com	
Andy	Trim	BP	44 (0) 1225 461 256	andytrim@adtltd.fsnet.co.uk	
Bruce	Urband	Grant Prideco		Bruce.Urband@GrantPrideco.com	
Cornelis	van der Linden	Total	713-647-3444	cornelis.van-der-linden@total.com	
Arjan	Voogt	Marin	832-758-4406	a.j.voogt@marin.nl	
Tom	Walsh	Shell		Thomas.J.Walsh@shell.com	X
Don	Wang	Chevron	832-854-2135	don.wang@chevron.com	X
Lihua	Wang	DNV	281-721-6683	lihua.wang@dnv.com	
Leiv	Wanvik	Aker-Kvaerner	713-596-4406	leiv.wanvik@akerkvaerner.com	X
Skip	Ward	INTEC Engineering		Skip Ward [egward@otrc.tamu.edu]	X
Simon	Webb	BP	281-249-1631	webbsp@bp.com	
Konrad	Weeber	GE Global Research			
Art	Weglein	University of Houston	713-743-3848	aweglein@uh.edu	
Jeremy	Welty	Mentor Subsea Technology Services, Inc.	+994 12 444 7000	jlwelty@mcdermott.com	
Steve	Wetch	Chevron	281-491-7600	swetch@chevron.com	
Thomas	Williams	Noble Corporation	281-276-6713	twilliams@noblecorp.com	
Phil	Winsor	Atlantia	281 899 4532	pwinsor@atlantia.com	
Momen	Wishahy	GlobalSantaFe	281-925-6683	momen.wishahy@globalsantafe.com	
Jer-Fang	Wu	ABS Americas	281-877-6856	jwu@eagle.org	
Mason	Wu	Acergy US Inc	713 300 6629	mason.wu@acergy-group.com	X

Chunfa	Wu	WorleyParsons Sea		cwu@sea-engr.com	X
Pieter	Wybro	WorleyParsons Sea	281-579-9700	pwybro@sea-engr.com	
Jun	Xu	Marintek	832-533-0563	jun.xu@marintek.sintef.no	
Jim	Yu	WorleyParsons Sea		jyu@sea-engr.com	X
Maurizio	Zecchin	ENI/Agip	39 02 520 61384	maurizio.zecchin@agip.it	
Jane	Zhang	Shell		Jane.Zhang@shell.com	
Rong	Zhao	Marintek	000-000-0000	Rong.Zhao@marintek.sintef.no	X
Charles	Zimmermann	BP	281-366-7011	zimmerca@bp.com	
Harry	Zonker	Alcoa	724-337-5326	Harry.Zonker@alcoa.com	X
Amin	Radi	Vetco		amin.radi@vetco.com	X
Roger	Lu	Aker Kvaerner		roger.lu@akerkvaerner.com	X
Muthu	Chezhian	DNV		muthu.chezhian@dnv.com	X
Jun	Chao	Aker Kvaerner		Jun.Chao@AkerKvaerner.com	X
Qi	Xu	Technip		qixu@technip.com	X
Shyam	Kumar	Technip		sskumar@technip.com	X
Lixin	Xu	Technip		Lxu@technip.com	X
Kostas	Lambrakos	Technip		Klambrakos@technip.com	X

Attachment 1

CTR Summary

CTR No.	Title / Description	Objective	Budget Amount	Suggested Match Level[1]	Submitted by	Champion	Comments
840A	Hybrid Riser Towers for XHPHT in GOM	Develop the basic design of a Hybrid Riser Tower capable of handling XHP (>20 000psi) and >350F sour service fluid in 10 000' of WD.	$940,000	1:1	Acergy (Jean-Francois Saint-Marcoux)	Total (Philippe Remacle)	
840B	Fatigue of Carbon Steel Welds for XHPHT conditions	Develop fatigue criteria that better account for stress levels and temperature so that safety factors may be lowered under controlled conditions.	$1,510,000		Acergy (Jean-Francois Saint-Marcoux)	Total (Philippe Remacle)	
840C	Dynamics of Risers arrays at High Reynolds Number	The purpose of the CTR is to perform test at high Reynolds numbers that will first confirm the results achieved obtained in the sub-critical regime, for a downstream cylinder in the wake of an upstream cylinder.	$905,000		Acergy (Jean-Francois Saint-Marcoux)		
840D	Fatigue Performance of High Strength Alloy Steel in Seawater	To evaluate the susceptibility of high strength steels, used for riser casing, to stress corrosion cracking (SCC) and HEE in seawater with CP. To determine the low-cycle corrosion fatigue performance of these materials in the form of S-N and da-dN curves, to confidently predict the service lifetime of deepwater risers. To promote a more realistic and less conservative fatigue lifetime evaluation method and develop fatigue assessment guidelines.	$374,500	1:1	WP Sea (Michel Dib)	Amerada Hess (Craig Edel)	
840E	Large Stroke Dry Tree Tensioner System		$1,400,000	3:1	Aker Kvaerner		***DELETED – same as 840I***
840F	Determination of acceptance criteria for weld defects in high-performance SCR's	The purpose of the CTR is to develop a less conservative crack growth analysis model which will be valid for high fatigue performance riser girth welds and would lead to more accurate acceptance criteria related to defects that are detectable with sufficient PoD. This will allow better utilization of the high fatigue performance riser girth welds existing and pursued by the industry, and be based on rational theoretically based acceptance criteria.	$2,400,000	1:1	Statoil (Steinar Kristoffersen) / Chevron (Pedro M. Vargas)	Statoil (Steinar Kristoffersen) / Chevron (Pedro M. Vargas)	Matching funds proposed as JIP.
840G	Determine Remaining Life of Polyester Rope Moorings	Use full scale rope tests and subrope tests to develop and validate a method to predict remaining life of mooring systems, so that we have proof that insert recovery is not necessary. Use risk and reliability methods to determine the relative risk of insert removal/recovery vs. not recovering inserts. Develop alternative methods (to insert recovery) to demonstrate that installed mooring systems are safe.	$250,000	4:1	Stress Engineering (Ray Ayers)	BP (Dave Petruska)	Phase 1, cost of phase 2 to be confirmed.
840H	Deepwater Dry Tree Semi Submersible	Develop a semi-submersible floater to support a number of deepwater top-tensioned risers. The semi configuration takes all phases of execution into consideration and the analysis is performed in an integrated manner. The study will optimize the conventional semi to suit the functional requirements of the risers and to utilize the existing capabilities of the industry.	$1,400,000	4:1	Aker Kvaerner (Leiv Wanvik)		
840I	Large Stroke Dry Tree Tensioner System	Develop a large stroke high capacity tensioning system ready for application in 4-5. The task is to convert an equivalent to today's 5th generation deep water drilling riser tensioning system (that already fulfills the task regarding stroke and tension capacity needs), into a functional and reliable "product assembly" to support a dry production tree system at the deck level.	$1,400,000	4:1	Aker Kvaerner (Leiv Wanvik)		

CTR No.	Title / Description	Objective	Budget Amount	Suggested Match Level[1]	Submitted by	Champion	Comments
840J	Near Shore Deck Float-Over for Deep Draft Semi	Develop an installation case for a large deck on a deep draft semi using one-barge float-over (float-through) method. Identify critical engineering and operational issues of a float-over installation and develop a float-over installation procedure along with an identification of the required equipment	$350,000	3:1	Aker Kvaerner (Leiv Wanvik)		
840K	CFD Simulations of Deepwater Riser VIV Responses & Fatigue	Advance the development of a practical CFD tool to predict riser VIV by: 1) establishing the validity of the quasi-3D or layered approach for CFD modeling of VIV response of long risers; 2) develop a fatigue model and investigate the impact of different assumptions on computed fatigue life; 3) investigating the modal nature of riser response to VIV in uniform and sheared flows for top-tensioned and catenary risers; 4) investigate the impact of placement of riser mitigation devices along the riser length	$220,000	4:1	OTRC (Rick Mercier)		
840L	HPHT Sour Testing: Coupon and Full Scale	Enable improved design of HPHT oilfield equipment, risers, and flowlines and faster monetization of HPHT prospects through increased knowledge of materials behavior in sour HPHT environments.	$3,500,000	4:1	Stress Engineering (Ray Ayers)		
840M	Riser & Flowline Crack Detection and Sizing Tool	Develop an ultrasonic technique for detecting and sizing cracks in risers and flowlines. Current methods, such as Magnetic Flux Leakage, are not capable of this due to the heavy wall. Conventional Ultrasonic techniques, such as TOFD, for crack detection and sizing have been found to be inadequate for seeing cracks in both tension and compression. The technique identified as suitable for crack detection and sizing would be incorporated into a free swimming inspection tool.	$7,000,000	4:1	BP (Michael Tognarelli)	BP (Adam Ballard)	
840N	Fatigue Performance of High Strength Riser Materials	Develop fatigue data for High Strength Steels (such as X-80, X-100, C-110, Q-125, C-125, V-140), Titanium (such as Grade 29 and newer alloys) and carbon fiber wrapped pipe (steel and titanium liner) riser materials. The sour service tests for intermediate and full scale specimens will help in establishing the correct scaling parameters for strip specimen results. This will be an evolution from current practice of using knock down factors.	$6,000,000		BP (Michael Tognarelli)	BP (Steven Shademan / Himanshu Gupta)	
840O	Carbon Fiber Wrapped High Pressure Drilling and Production Riser Qualification Program	Determine, through large scale tests and analysis, if carbon fiber wrapped steel riser pipe (steel/composite hybrid) is suitable for long-term use in the harsh environment of deep water offshore. Specifically, it will establish design methodology and end termination issues, cost effective wrapping method/manufacturing process, and address handling, storage and impact energy absorption capacity, along with long-term durability and fitness for purpose for drilling and production riser applications.	$1,300,000	3+:1	BP (Michael Tognarelli)	BP (Roy Shilling)	
840P	Advanced Mooring System Truncation for Ultra-Deepwater Model Testing	Evaluate the merit of new truncated mooring models developed at Offshore Model Basin to improve design methods in ultra-deepwater model testing.	$597,000	4:1	Offshore Model Basin (Nick Markov)	CVX (Ming-Yao Lee)	Matching funds from donated basin time.
840Q	Wave Impact loads on Offshore Installations in Extreme Seas	Enhance the ability to accurately and efficiently predict loads due to extreme waves in steep irregular sea states, using improved, more robust and reliable methods and procedures. A rational use of existing and improved analysis software shall be developed through new knowledge from model test data and field measurements	$2,000,000	3:1	Marintek (Rong Zhao)		
840R	Robust and Efficient Procedures for Verification of Ultra Deepwater Floater Systems	Establish methods and procedures for on-line, full-depth simulations of model tests with computations/visualization occurring in real-time as the truncated model test is being preformed. Enhance methods and procedures for verification of floater systems with small vessels in ultra deep water.	430,000	3:1	Marintek (Rong Zhao)		

CTR No.	Title / Description	Objective	Budget Amount	Suggested Match Level[1]	Submitted by	Champion	Comments
840S	Riser Tensioner Solutions	To establish functional requirements for a dry tree semi tensioner in 10,000 ft depth. To demonstrate, by analysis, the feasibility and economy in using a SeaTensioner to support 10,000 ft production or drilling riser on a semi. To identify and address the technical issues pertaining to the tensioner manufacturing, installation, operation and maintenance.	$188,000		WP Sea (Michel Dib)	Amerada Hess (Craig Edel)	$28,000 in-kind?
840T	Novel Analysis Methods for Vortex-induced Vibration	Identify a handful of realistically viable novel VIV analysis approaches that compare well with full-scale data and could be converted into widely-usable computer programs. Compare selected techniques to full database of monitored drilling riser data and state-of-the-art tools; perhaps collecting more data if it will help to fill gaps which would further the research. Develop preferred analysis method(s) into commercial-grade computer programs.	$1,500,000	4:1	BP (Michael Tognarelli)	BP (Michael Tognarelli, Rupak Ghosh)	
840U	Lightweight Topsides Development for DW Floaters	Develop an economic lightweight topside concept through an integrated material, design and manufacturing approach, which also addresses key regulatory issues related to fire safety, blast safety and corrosion.	$1,000,000	4:1	Stress Eng. (Ray Ayers), Alcoa		
840V	Offshore Riser VIV Measurement Program				OTRC		***Replaced by 840EE???***
840W	Ultra-deepwater Dry Tree System for Drilling and Production in GOM, Phase 1	Define potential and gaps for developing a dry tree semi or alternate hull form to a feasible and competitive floater solution for GOM in 8,000 ft water depth. The study will explore tradeoffs such as: 1) Semi draft that allows quayside integration; 2) Deep draft semi that allows use of "standard" tensioning technology (motions comparable to spar); 3) Topsides installation options such as quayside versus near-shore floatover versus offshore lift. The study will identify gaps and challenges associated with each option including equipment limitations, fabrication, transportation, installation, well-bay layout and HSE considerations.	$600,000	4:1	CVX (Paul Devlin/Ming-Yao Lee)	CVX (Paul Devlin/Ming-Yao Lee)	
840X	XHPHT Drilling Riser Design	Enhance the relevant technologies and develop a feasible, economical, and reliable system for the XHPHT drilling riser.	$800,000		Technip (Jin-Sug Chung)		
804Y	New mooring materials and rope configurations for Gulf of Mexico floating and drilling platforms	Quantify the effects of deepwater mooring systems with novel material and rope configurations on Spar and Semi-submersible platforms, including platform motion performance, benefits to a vertical riser system, knock-on benefits to topside layout and drill-floor elevation, mooring system material and installation cost, mooring system maintenance, and possibly hull fabrication (such as elimination of strakes). Evaluate the commercial maturity of high-modulus synthetic fiber used as mooring line material and to evaluate the construction methods required to manufacture mooring lines from these materials.	$1,062,000		Technip (Jin-Sug Chung)		
840Z	Stranded Gas Management	In order to make isolated fields with small amounts of associated gas economically viable or to enable Early Production Systems without the burden of a pipeline, a technically sound and cost-effective method of delivering gas to market must be developed. This CTR intends to determine the technology readiness of various gas delivery options and to identify the barriers to implementation.	$327,000		Technip (Jin-Sug Chung)		System's Engineering?
840AA	STEEL CATENARY RISER (SCR) FIELD TESTS	Design, fabrication, and installation of a model SCR riser in 2500-3000 feet of water depth. Measurements will be analyzed with the aim to understand the SCR response in terms of VIV and generals wave response. The focus of the analysis will be the TDP and the hang-off point sections of the SCRs.	$1,300,000	1:1	Technip (Jin-Sug Chung)		

CTR No.	Title / Description	Objective	Budget Amount	Suggested Match Level[1]	Submitted by	Champion	Comments
840BB	Program to Demonstrate the Extended Draft Platform (EDP) Concept, with Provision for Third Party Offshore Testing	Design, fabricate and install an EDP buoy at a Gulf of Mexico location to obtain EDP load and performance data for use in demonstrating and confirming the design.	$7,000,000	1:1	Technip (Jin-Sug Chung)		
840CC	Design and manufacture of a test facility to demonstrate system functionality and fatigue crack sizing capabilities of a direct assessment tool for SCR inspection	The aim of this project is to design and manufacture a test facility that can prove the overall functionality of this new generation of ILI tool and demonstrate the fatigue crack sizing capability necessary for the effective inspection and integrity management of deepwater risers. The ILI tool developed by Technip/SIG will complete manufacture in July 2007 and be ready for system and functionality tests prior to operational deployment.	$1,848,800		Technip (Jin-Sug Chung)		
840DD	Drag-Reducing VIV Mitigators for Drilling Risers	Design a VIV mitigation device that also reduces drag that: (a) performs hydrodynamically; (b) is structurally robust; (c) is lightweight and compact; (d) is easy to handle, store and install; (e) is resistant to (or its performance is insensitive to) marine fouling.	$2,325,000	4:1	BP (Michael Tognarelli)	BP (Michael Tognarelli)	
840EE	Offshore Riser VIV Measurement Program	The object of this project is to develop and execute a field project to measure VIV on a near-prototype scale riser in uniform and sheared flows in the Gulf of Mexico.	$8,200,000	4:1	Chevron (Owen Oakley)	Chevron (Owen Oakley)	Phase 1 - $200,000
840FF	Composite Riser for Ultra-Deepwater High Pressure Wells	Development and field trial of a light-weight drilling/completion riser (a few riser joints) that has a water depth capability in excess of 10,000 feet and a pressure capability in excess of 15,000 psi while at the same time provides a 50% reduction in the in-water weight of a comparable steel riser.	$5,000,000	4:1	Shell (Tom Walsh and K. Him Lo)	Shell (Tom Walsh and K. Him Lo)	
840GG	Dry Tree Semi Design in Ultra Deep Water and Its Physical Model Tests	Provide alternative dry tree floating production system for ultra deepwater application	$1,000,000	4:1	Shell (Shankar S. Bhat)	Shell (Shankar S. Bhat)	
840HH	Ultra Deepwater High-Efficiency Anchor	Develop a method to predict the holding capacity of a new anchor design for deepwater application, to propose a cost-effective methodology for its installation, and produce a preliminary design for efficient high capacity anchors for GOM. The design will then be demonstrated in a prototype installation on a project of opportunity.	$4,442,900		Technip (Jin-Sug Chung)		
840II	Validation and Improvement of Design Tools and Platform Integrity Management	Validate floating system global analysis techniques and model testing verification for ultra-deep water depths. Develop hybrid systems using real-time, full-scale measurements combined with analytic tools to monitor and predict remaining life of components.	$1,750,000	4:1	Chevron (Ming-Yao Lee)	Chevron (Ming-Yao Lee)	
840JJ	Full Scale SCR Monitoring	To measure the response of the non-straked full scale deepwater SCR and assess the level of conservatism in current design methodology.	$1,721,700	1:1	2H (Mat Podskarbi)	Petrobras (Cristina Lucia Duarte Pinho)	
840KK	Composite Carbon Thermoplastic Tube Fabrication and Testing for Deepwater Applications	To bring composite thermoplastic tubes from the development phase to a stage where a full size prototype section could be tested in the field for a real application.	$3,055,000	4:1	Doris (Bill Hudson)	Total (Philippe Remacle)	
840LL	Galvanic Corrosion Coupling in SCRs	Develop a testing program and modeling to quantify galvanic corrosion effects between dissimilar materials used in SCR construction, determine the length of carbon steel affected by galvanic coupling, and assess the propensity of preferential weld corrosion in presence of the galvanic couple.	$755,350	3:1	DNV (Afzal Hussain)		
840MM	Dry Tree Semi Enabled by CVAR Technologies: Qualification of CVARS to RPSEA criteria	Develop and qualify the dry-tree Semi using CVARs.	$500,000	4:1	Granherne (Rajiv Aggarwal)		

CTR No.	Title / Description	Objective	Budget Amount	Suggested Match Level[1]	Submitted by	Champion	Comments
840NN	Early Stand Alone Cost Effective Injection Well System	Develop a cost effective way to provide a stand alone injection system for the deep water GOM environment to greatly enhance the optimization of many deep and ultra-deep water oil fields. The proposed water injection system could be deployed on a cost effective, dynamically positioned vessel (not an FPSO or FPU), which could easily be disconnected in case of hurricanes, re-deployed, and have the flexibility to quickly return to shore for servicing of the vessel and equipment.	$3,562,000		Anadarko (Jenifer Tule Gaulden)	Anadarko (Jenifer Tule Gaulden)	Referred to flow assurance committee
840OO	VIV Analysis and Modeling Program	Using the high L/D data from the 7402/8402 offshore tests as the primary datasets, the project will develop a high quality case matrix suitable for software verification and distribution, characterize the responses to fully understand the VIV behaviors, develop advanced CFD techniques and models specific to VIV and develop user guidance.	$1,000,000	4:1	Chevron (Owen Oakley)	Chevron (Owen Oakley)	Continuation of CTR 8402 (data analysis phase)
840PP	Integrated Drilling and Production Dry Tree Semi for HPHT and Heavy Oil Developments in Ultra-Deep Water	Develop a fully integrated design for drilling, completion, and production of HPHT and heavy oil lift in ultra-deep water. The design will address downhole, subsea, riser, and supporting floater structure issues.	$1,081,620		Floatec (Christopher M. Barton)		
840QQ	Deepwater Production Riser Systems for 15ksi Service – Riser Hardware	Enable production on 15ksi wells in deepwater using top-tensioned risers. The project will start on a solid foundation of existing 10ksi riser component designs and build upon it.	$2,800,000	4:1	Vetco Gray (Amin Radi)		
840RR	Deepwater Drilling Riser Systems for 10ksi Service – Floating Production Platform Riser Hardware	Enable drilling on 10ksi wells in deepwater large diameter (~22”) risers from a floating production platform. The project will start on a solid foundation of existing 10ksi riser component designs and build upon it.	$1,330,000	4:1	Vetco Gray (Amin Radi)		
840SS	RIG ASSIST - HWO STANDARDS NEEDED TO ALLOW ACCESS TO HPHT WELLS	To define what is necessary to adapt HWO equipment to be installed and used, quickly and safely, on floating drilling/production vessels.	$450,000	4:1	Granherne (David B. Andersen)		Referred to 8500 committee (drilling / completions)
840TT	Cataloging and comparing integrity management tools and strategies to support standardization and gap analysis	To catalogue tools available to manage the integrity of offshore assets (monitoring, inspection, maintenance, repair); Identify the most and least effective IM tools; and identify gaps in IM technology.	$300,000		Technip (Ron de Jong)		