



# THE OKUME COMPLEX PROJECT

August 25, 2005

# AREA MAP

## *EQUATORIAL GUINEA*

Population ~ 500,000

Size  $\cong$  Maryland

Former Spanish colony –  
Spanish, tribal languages and  
English spoken

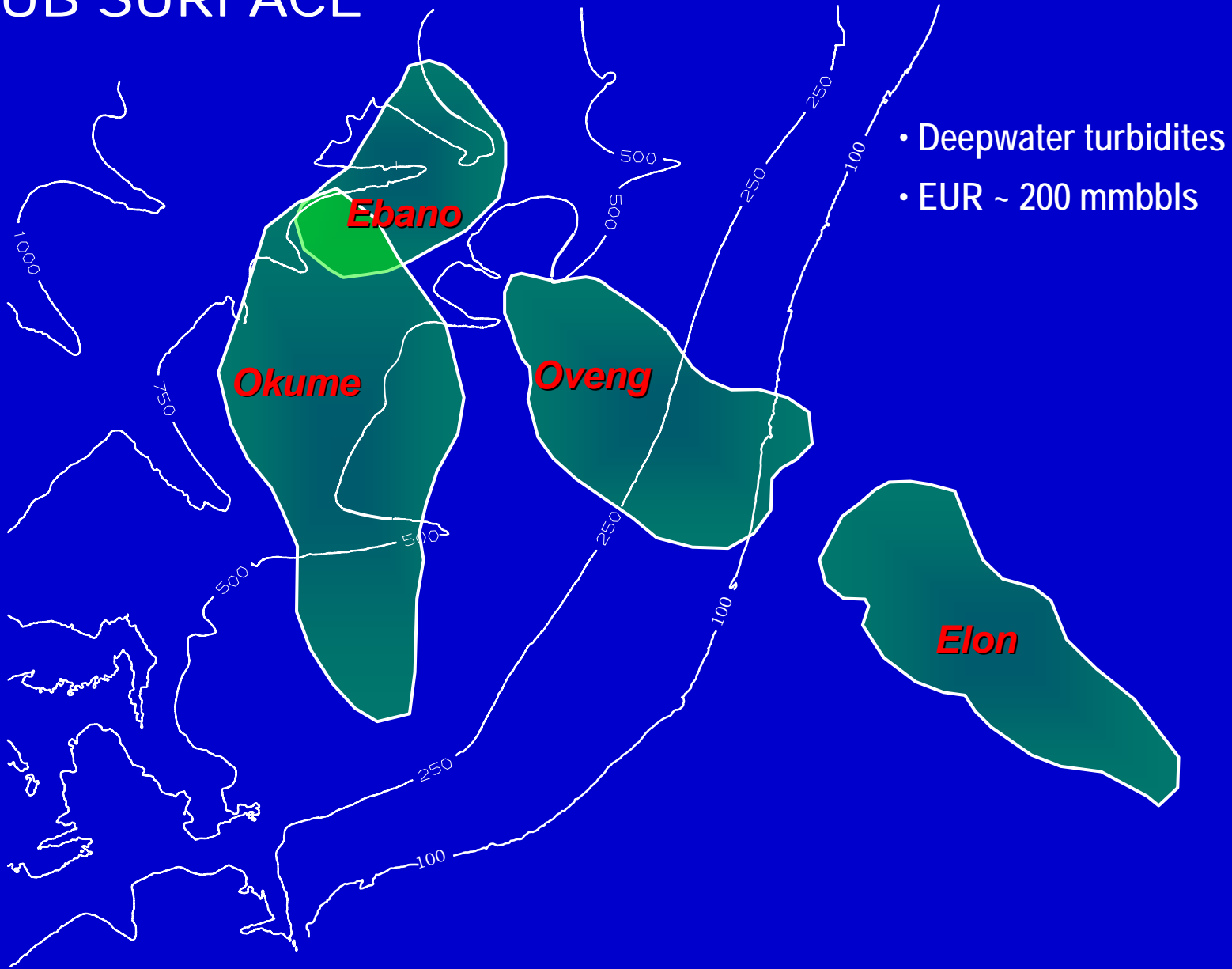
Major increases in petroleum  
revenues over last 5 years –  
ExMo Zafiro, MOC Alba,  
AHC Ceiba

International spotlight – issues  
with transparency of budgets  
and oil revenues

Limited indigenous service  
infrastructure, but  
considerable interest to develop



# SUB SURFACE

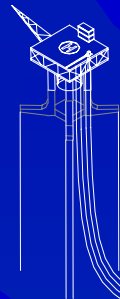


# FIELD LAYOUT

**Okume/Ebano  
Mini-TLP**



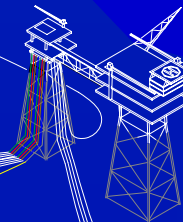
**Oveng  
Mini-TLP**



**Satellite 1**



**Satellite 2**



**Central  
processing  
facility**

**Elon**

**Satellite 3**

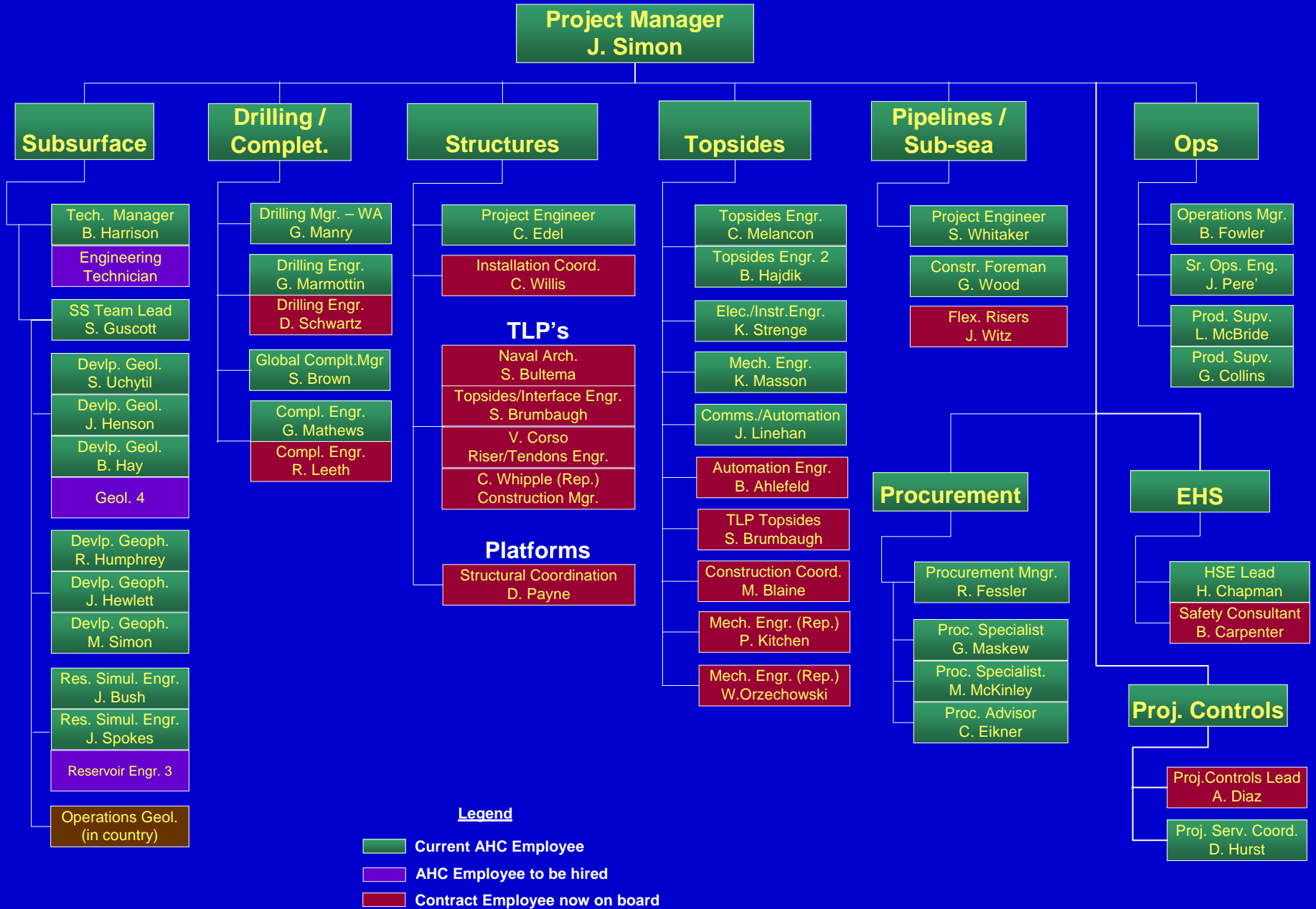


**Sendje Ceiba  
FPSO**



- AHC W.I. : 85%
- OPERATOR : AHC
- 43 WELLS (26 Prod, 17 Inj), 71 Slots
- 60 kbopd, 120 kbfpd
- 135 kbswipd, SO<sub>4</sub> removal
- 10-15 mmscfd gas injection/disposal/storage
- Full field gas lift

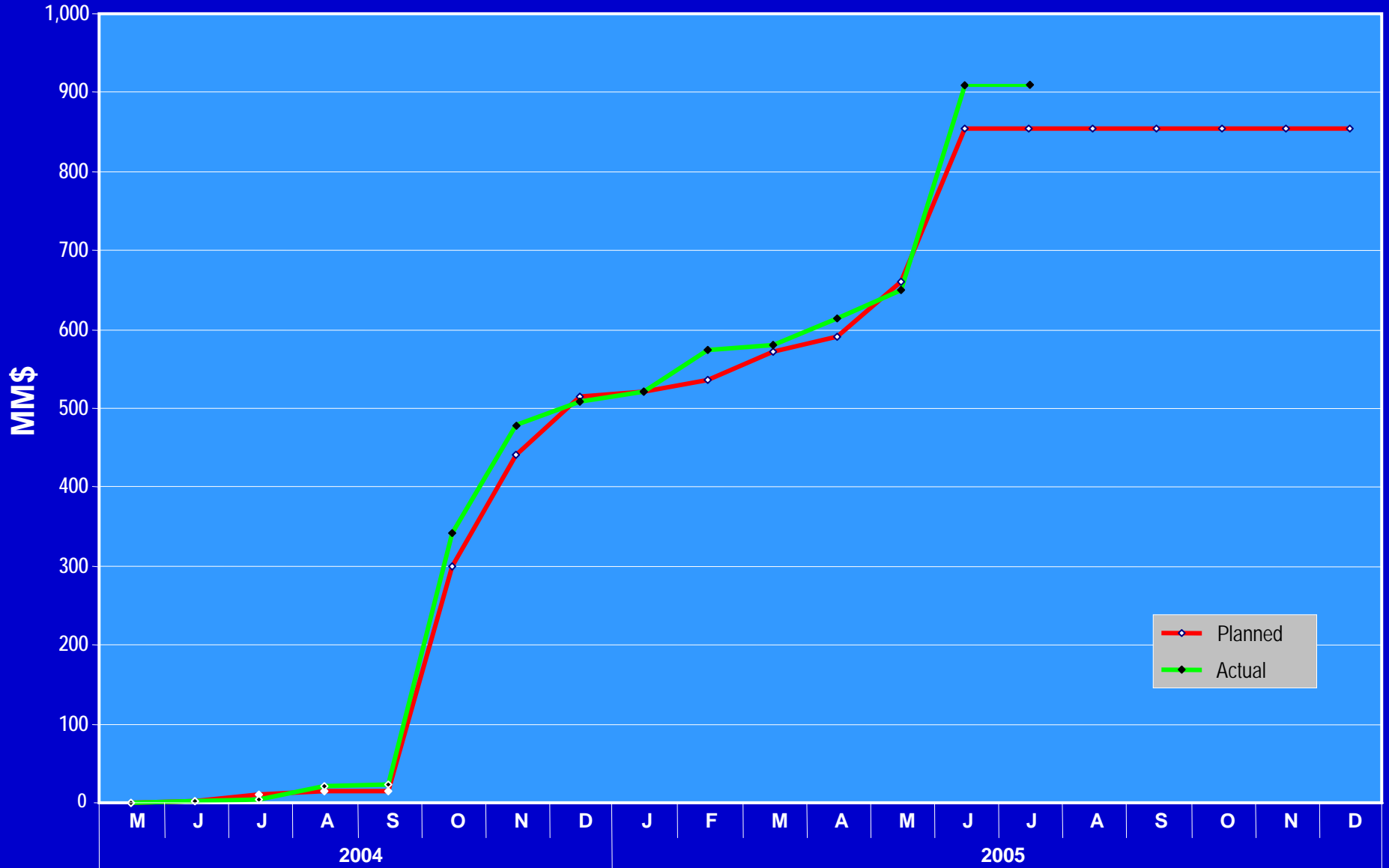
# PROJECT ORGANIZATIONAL CHART



# CAPITAL BUDGET

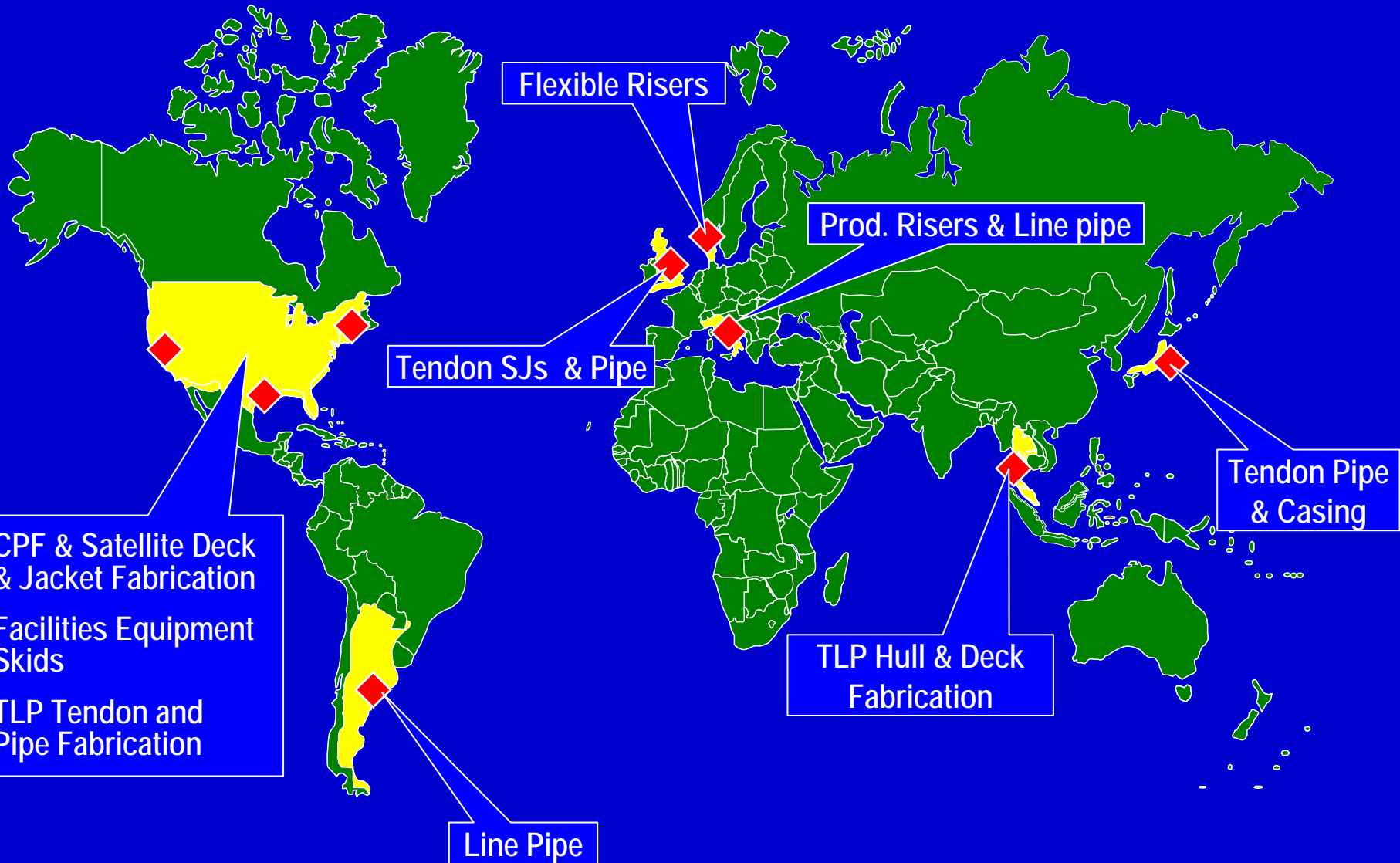
	<u>Forecast</u>
<b>FACILITIES</b>	
Project Team , CAR, Studies	
Elon CPF, Satellites	
Oveng, Okume/Ebano TLPs	
Subsea	
	<hr/>
<b>Total Facilities</b>	<b>653.0</b>
<b>D&amp;C</b>	
Drilling	
Completion	
	<hr/>
<b>Total Drilling / Completion</b>	<b>453.4</b>
	<hr/> <hr/>
<b>TOTAL</b>	<b>1106.4</b>

# COMMITMENT STATUS



	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
	2004									2005										
Planned	0	3	11	14	14	299	440	516	521	536	571	590	661	854	854	854	854	854	854	854
Actual	0	3	3.6	20	23.1	342.5	478.1	509.4	521.8	573.9	580.8	614.4	650.1	909.1	909.1					

# COMPONENT FABRICATION LOCATIONS



# CONTRACTOR SAFETY PERFORMANCE

Contractor	Man-Hours		Recordable Injuries		Lost Time Injuries	
	Month	ITD	Month	ITD	Month	ITD
Mustang Eng.	13,266	164,199	0	0	0	0
Intec Eng.	1,103	11,721	0	0	0	0
MODEC	10,586	47,247	0	0	0	0
Gulf Island	32,332	159,520	1	1	0	0
Kiewit	25,467	72,419	0	0	0	0
Samsung H.I.	158,454	720,312	0	0	0	0
<b>Total</b>	<b>241,208</b>	<b>1,175,418</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>



# TLPs



## OVENG & OKUME TLPs

- MODEC (EPC)
- 280, 500 meters
- 18 slots, top tensioned risers
- 10 initial wells planned at Ovang  
13 at Okume/Ebano
- Front-end process facility on each

## UNIQUE CHALLENGES

- Two TLPs Concurrently (AHC's first)
- Drill with tender-assist platform rig
- High angle (i.e. 60-70° +) wells with multiple completions, including "Smart Wells"

# TLP HULL FABRICATION



**Okume TC 41 Block**



**Okume TS 30 Block**



**Oveng TS 10 Block**

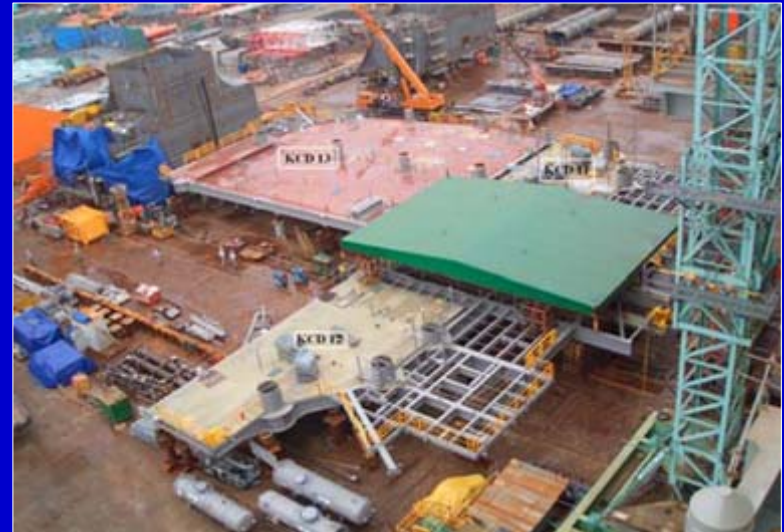


**Oveng BS showing well slots**

# TLP DECK FABRICATION



**Oveng Cellar Deck**



**Okume Cellar Deck**



**Oveng Main Deck**



**Okume Main Deck**

# TLP TOPSIDE EQUIPMENT



**Crude Run Tank**



**Disposal Sump Caisson**



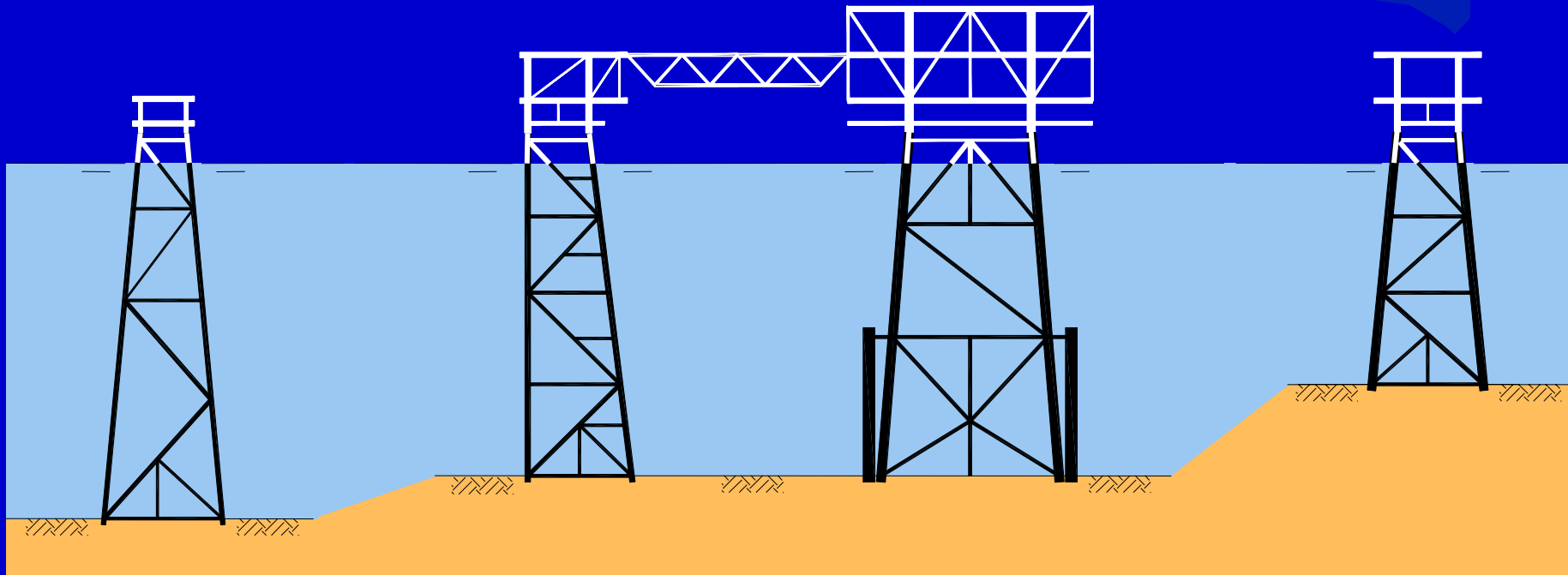
**Gas Flotation Skid**



**Pressure Vessels**

# ELON FACILITIES

Elon  
Reservoir



## Satellite 1

Tripod  
Platform

228 Ft

8 Slots

-

## Satellite 2

4-Leg  
Platform

206 Ft

15 Slots

-

## CPF

4-Leg Platform  
w/ Skirt Piles

205 Ft

-

Processing

## Satellite 3

4-Leg  
Platform

145 Ft

12 Slots

Separation

# ELON JACKET FABRICATION



**Satellite 1 Jacket**



**Satellite 2 Jacket**



**Satellite 3 Jacket**



**CPF Jacket**

# ELON DECK FABRICATION



**Installation of Well Head Access Platform**



**CPF cellar deck framing**

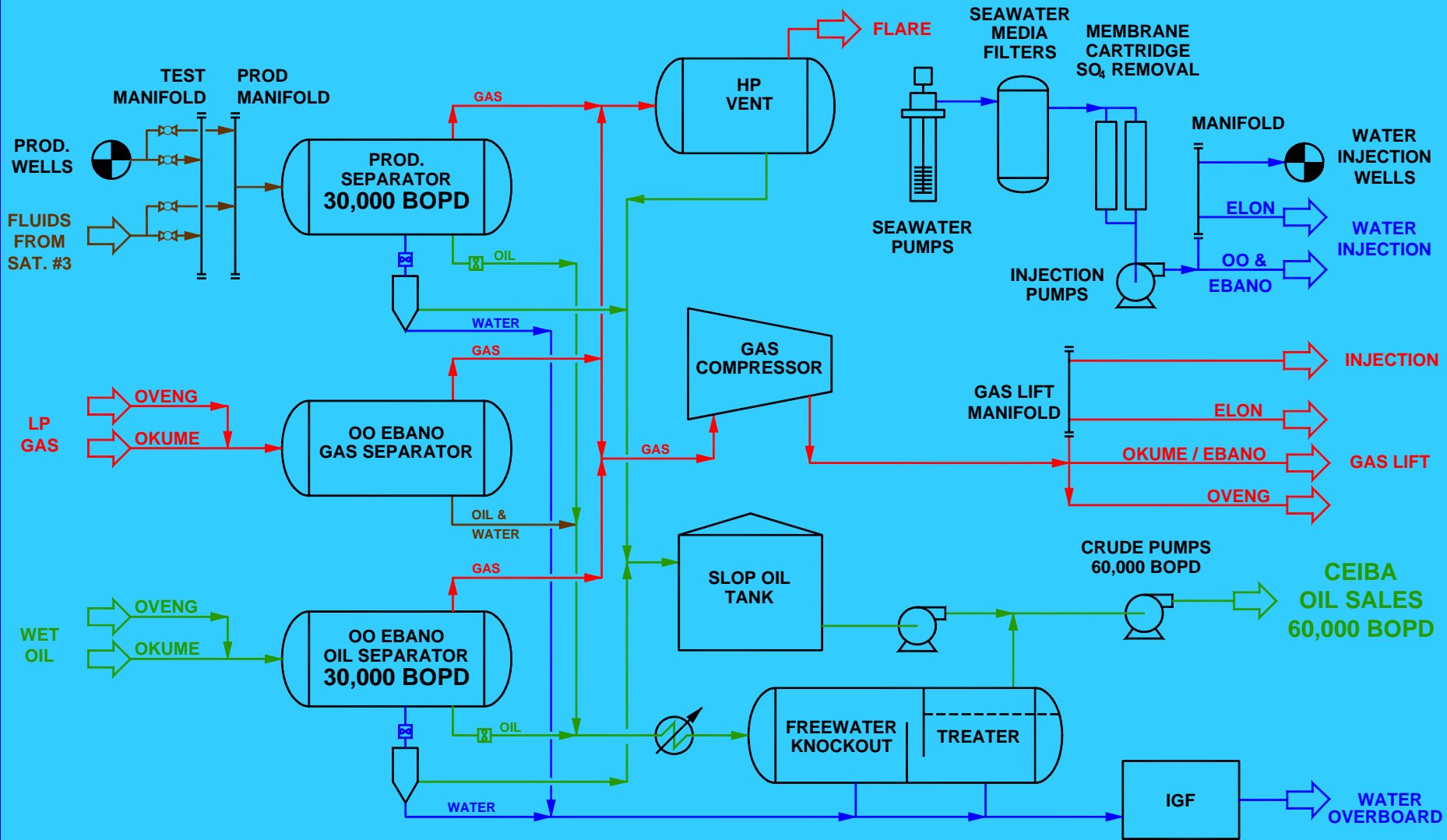


**Main deck float – Sat. 2**



**CPF main deck framing**

# ELON CPF



# ELON TOPSIDES PACKAGE FABRICATION



**Oil Treater Vessel**



**Pig Launcher Skid Fabrication**



**Production Manifold**



**Production Skid Fabrication**

# PIPELINES



**Induction welding - CORUS**



**Installation Vessel - Seaway Falcon**



**Pipe coming out of the expander**



**Tamsa pipe in transit to Port Gentil**

# DRILLING / COMPLETION

## Tender Assist Drilling Rig – Atwood *Seahawk*

- Commence ~ Sept 1, 2006 for ~ 30 months

## Jack Up Drilling Rig – Noble *Earl Fredrickson*

- Commence ~ Oct. 1, 2006 for ~ 20 months



Earl Fredrickson

## Integrated Contract for Drilling & Completion Services/Products

- LOIs issued to Schlumberger (Drilling) and Baker Hughes (Completions) – Ceiba included.
- Some services sub-contracted

## Wellheads/Trees - FMC



Seahawk

# OPERATIONAL READINESS PLANNING

- **Key production operations resources embedded in project team from day 1**
- **OC will more than double production and activity levels for AH in EG**
- **Recruiting efforts ongoing in earnest, including for field supervision and onshore engineering resources**
- **Procurement process underway for EG-wide O&M contractor**
- **Formulating preliminary commissioning plans**
- **Developing plan to hire local services and employees (including training)**

# KEY INTERFACE ISSUES

- **TLP/TADU interfaces**
  - tandem/relative motions, man-way, weights, space requirements
- **Flex riser pull-ins**
  - TADU, winch, TLP I-tubes
- **Sub-sea install/tie-ins**
  - Installation around Jack-up, TADU
- **Pre-commissioning, commissioning**
  - Choreography around rig, pipeline installation, simultaneous operations
- **Remote environment**

# LOOKING AHEAD

## KEY RISKS / CHALLENGES

- Fabrication of TLPs at Samsung is on schedule, but critical path
- Fall 2006 installation choreography (Thialf, Falcon, J/U and TADU)
- Drilling / completions planning and execution (high angle wells, complex geology, numerous completion drivers, services cost optimization)
- Planning, execution, optimization of pipeline tie-ins
- Managing challenging contractors

## OPPORTUNITIES

- Early life rate upside (need well productivity)
- Okume SE area
- Extra well slots, prices

# KEY MESSAGES

- **The Okume Complex project is one of the most challenging and complex AHC has undertaken, and is critical for us to deliver successfully**
  - fortunately, well positioned for success
- **Competent project team, and realistic schedule and budget are an essential foundation**
  - fortunately, we have them on OC
- **Q1 Safety performance requires continuous commitment and reinforcement**
  - fortunately, we have that dedication and quality contractors
- **Successful project execution also requires constructive production engagement and planning**
  - fortunately, we have that on OC

Thanks for your attention !

Any questions ?

