



OYO OML 120
DEVELOPMENT
Offshore Nigeria

Allied
ENI
NAE
CAMAC



OYO FPSO

Sanction to First Oil
in 22 months

“A CASE STUDY”

presented by

Steve Hill
COO Oceanic

Houston
7th July 2010



PRESENTATION AGENDA

1. WHY AN **FPSO**: ADVANTAGES AND DISADVANTAGES
2. ORGANIZATION
3. PLANNING
4. INTERFACES
5. CONTRACT EXECUTION
6. LESSONS LEARNED

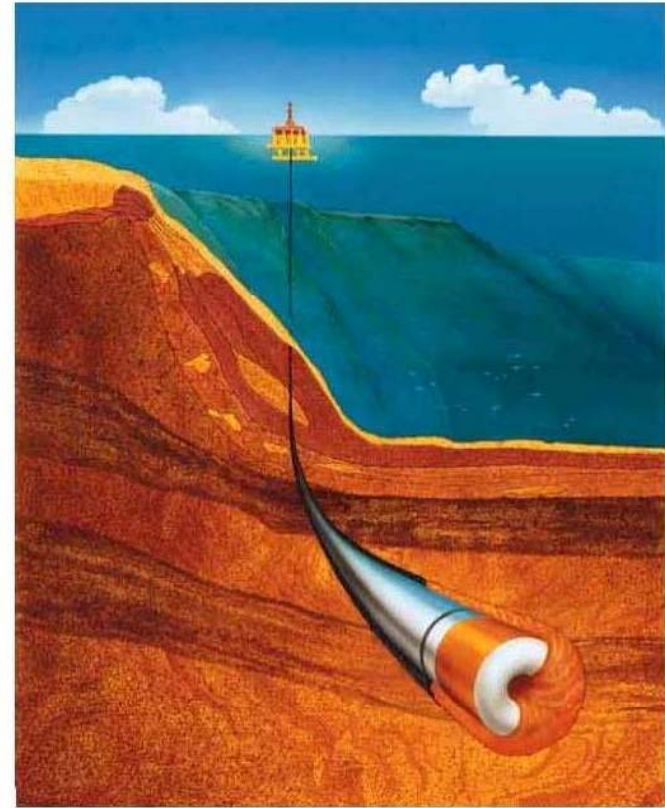
WHAT IS FPSO



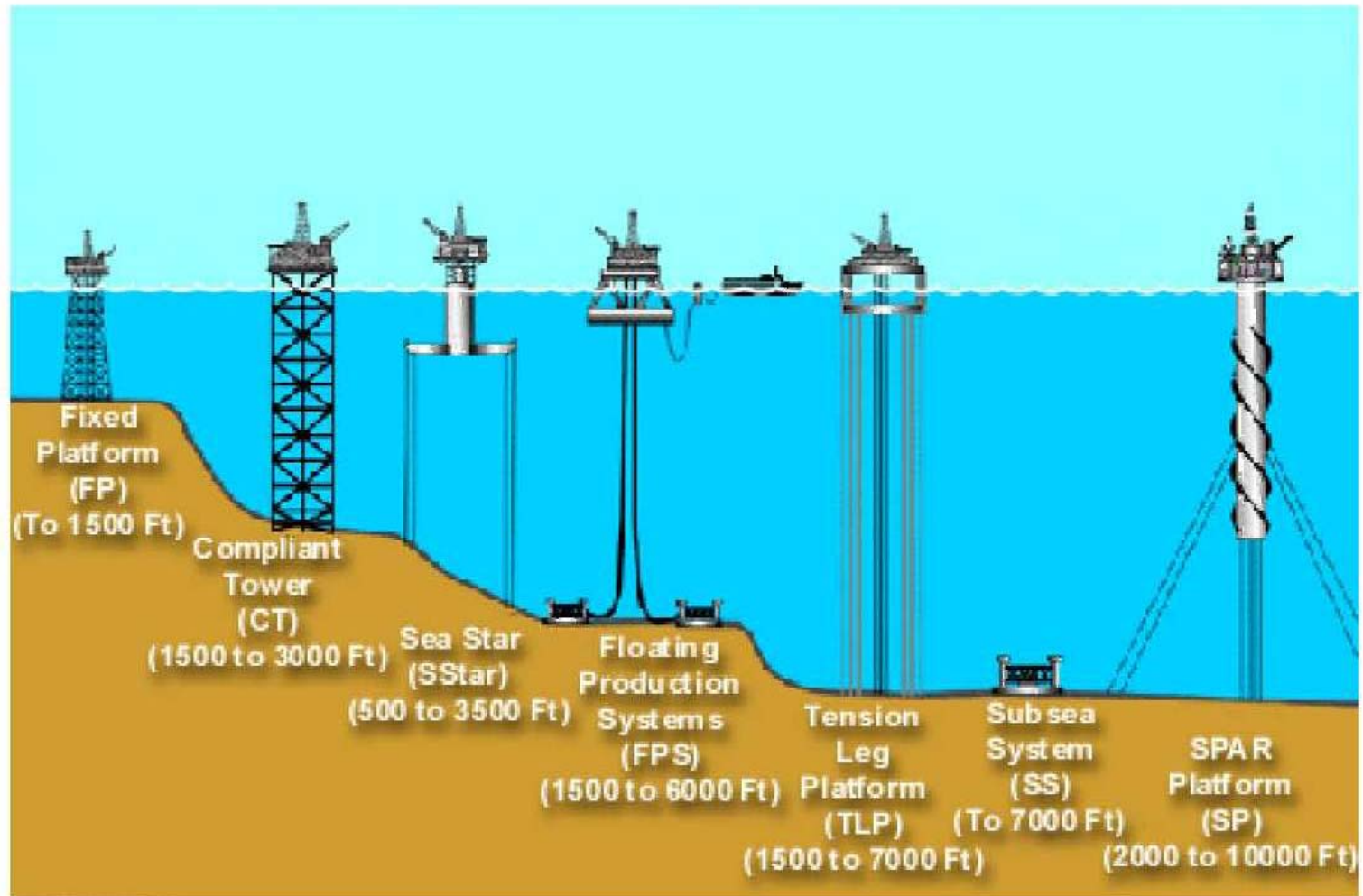
“Floating Production, Storage and Offloading”
for deep water production

WHAT IS DEEP WATER

- Most common definition
 - Water depth > 1000 ft
- From Drilling and Production perspective
 - Any well connection on a FLOATING structure
- Conventional Deepwater
 - GOM Water depths of 3,000-8,000 ft
 - Nigeria 1,000-3,000 ft
- Ultra Deepwater
 - Brazil & GOM now drilling > 9,000' ft



PRODUCTION SYSTEMS BY WATER DEPTH

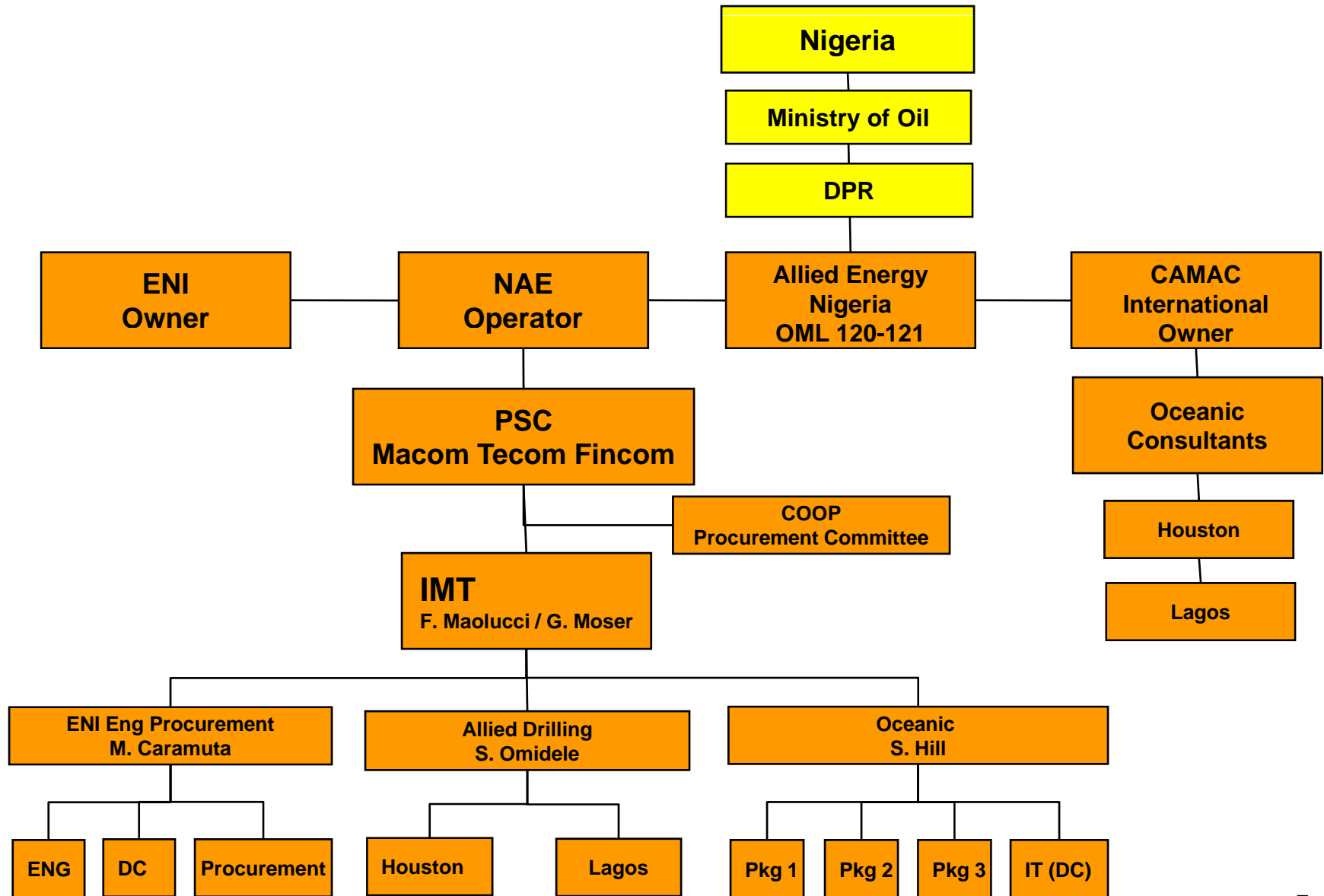


NIGERIA LOCATION MAP



Undated: May 22, 2006

OYO FUNCTIONAL CHART



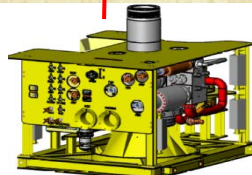
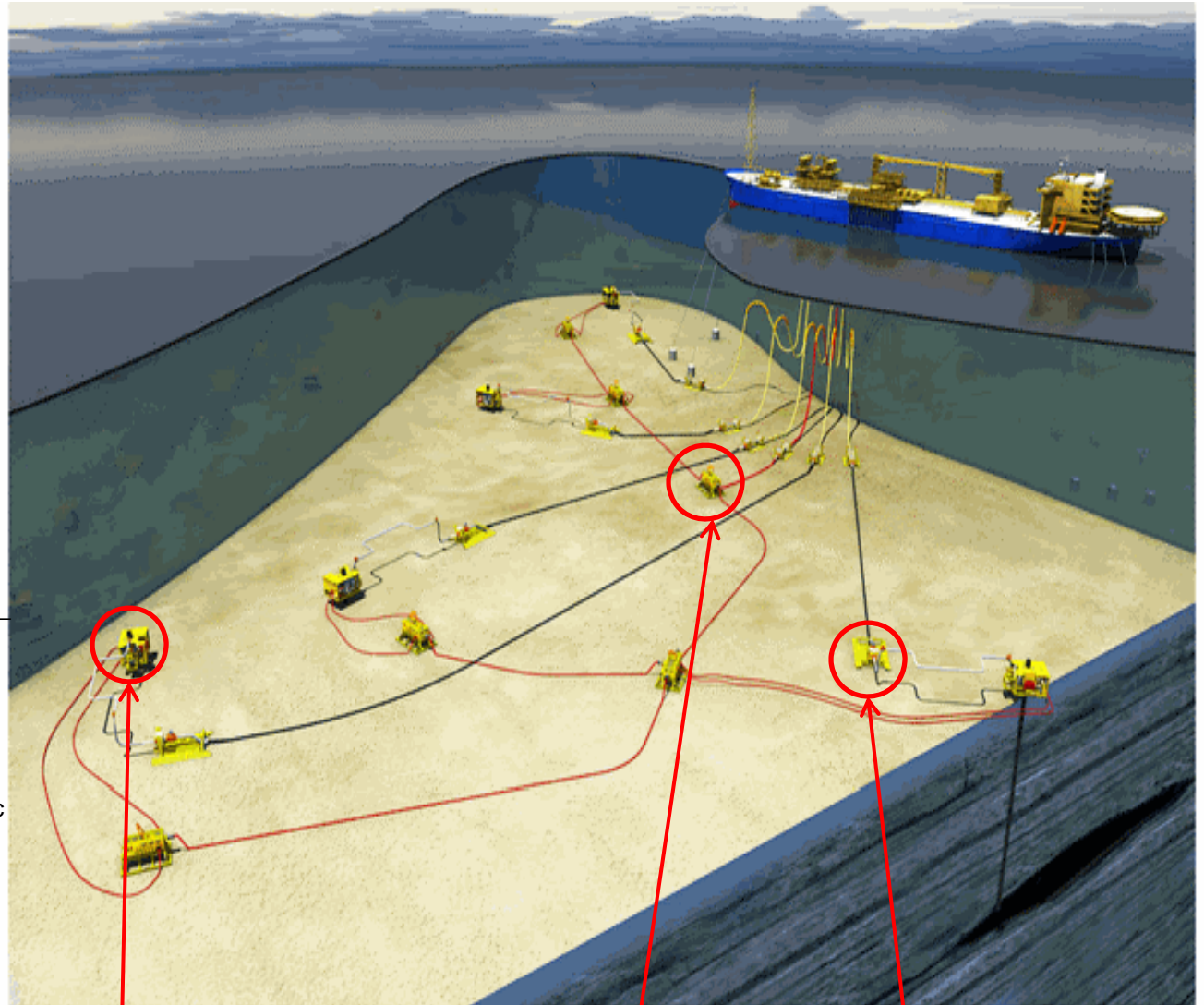
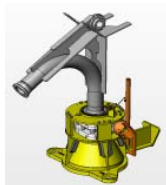
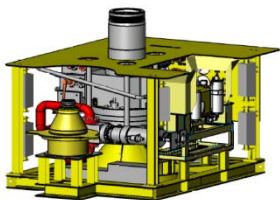
FPSO SPECIFICATION

| | |
|----------------------------------------------------|---------------|
| ◆ Storage (bbls) | 1,000,000 |
| ◆ Design Flow Rate (b/d) | 40,000 |
| ◆ Mooring type | spread |
| ◆ Offloading type | tandem |
| ◆ Production life (years) | 10 |
| ◆ Gas treatment rate (mmscfd) | 60 |
| ◆ Gas injection rate (mmscfd) | 60 max |
| ◆ Max Produced Water (bwpd) | 9,000 |
| ◆ Overboard Water Quality (ppm) | < 15 |
| ◆ Tandem Tanker size (dwt) | up to 350,000 |
| ◆ Oil shipment cargo pump discharge flowrate (b/d) | 1,000,000 |
| ◆ Metering system | 30,000 bp/hr |

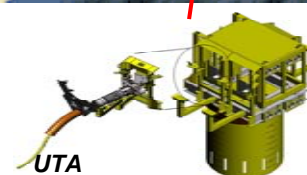


SUB SEA SPECIFICATION

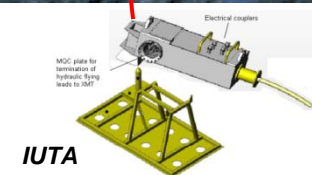
| | |
|-----------------------------------------|-------------------|
| ◆ Subsea (SS) tree type | horizontal |
| ◆ X-Tree Design Pressure Rating (psi) | 10,000 |
| ◆ Wellhead Design Pressure Rating (psi) | 15,000 |
| ◆ SS Control System Type | electro-hydraulic |
| ◆ Well completion tubing size | 4.5" – 5.5" |
| ◆ Gaslift (one well) | yes |
| ◆ Production flowline MAOP (psia) | 5,000 |



Horizontal Deepwater Tree



UTA



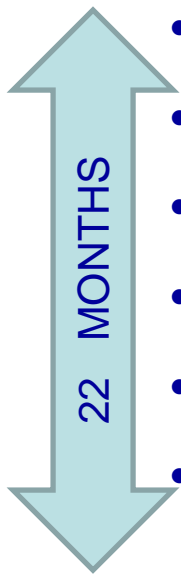
IUTA

THE DRIVING FORCES FOR QUICK EXECUTION

- SAFETY FIRST. **“SAFETY”**
- PLAN THE WORK & WORK THE PLAN. **“MAKE A PLAN”**
- USE THE MOST EXPERIENCED PERSONNEL AVAILABLE.
“THE BEST PEOPLE”
- CONSTANTLY CHECK AND RE-CHECK CONTRACT SPECIFICATIONS
TO ACTUAL WORK. **“AS-BUILTS”**
- MANAGE THE PACKAGES, NOT THE INDIVIDUAL CONTRACTORS.
“INTERFACES”
- USE DATA AND INFORMATION TO DETERMINE ACTIONS, NOT
EMOTIONS FOR FEELINGS. **“DATA BASE”**

MILESTONES

- DRILLED OYO 1 – 1998 (STATOIL)
- DRILLED OYO 2 – 2006 (BP)
- FEED for FPSO – 2006
- DRILLED OYO 3 – 2007
- DRILLIED OYO 4 – 2008
- SANCTION TO OYO DEVELOPMENT PLAN – FEB 2008
- HULL MOVED TO SINGAPORE AND CONVERSION STARTED – APR 2008
- MECHANICAL ACCEPTANCE – AUG 2009
- SAILED AWAY – 13 SEP 2009
- ARRIVED OYO – 5 NOV 2009
- FIRST OIL – 5 DECEMBER 2010



PROJECT AFE BUDGET

CAPEX, OPEX, ABEX and Production

| NIGERIA - OYO - Fpso (Leasing 5+5x1 years option), First Oil: July 2009 - Total wells: 4 (2 p, 1 w.i., 1 g.i.) | | NOW |
|----------------------------------------------------------------------------------------------------------------|----------------|------------------|
| CAPEX | TOTAL | TOTAL |
| Geophysical/Geotech Survey | 3.500 | 5.500 |
| PM & Engineering | 22.000 | 24.000 |
| Subsea | 94.310 | 94.310 |
| Flowlines & Installation | 106.670 | 138.670 |
| FPSO (Mob. Fee/Mooring) | 35.000 | 35.000 |
| Drilling & Completion | 200.500 | 200.500 |
| Taxes | 30.200 | 32.800 |
| Insurances | 2.610 | 2.610 |
| Others(allowance) | 20.098 | 23.298 |
| Total CAPEX [k\$] | 514.888 | 556.688 |
| OPEX | | |
| Internal Opex | 52.000 | 52.000 |
| FPSO Fee (Daily+Operation) | 395.345 | 395.345 |
| Workover | - | - |
| Total OPEX [k\$] | 447.345 | 447.345 |
| | 962.233 | 1.004.034 |

OML 120-121 TECOM No7 10th June 2008

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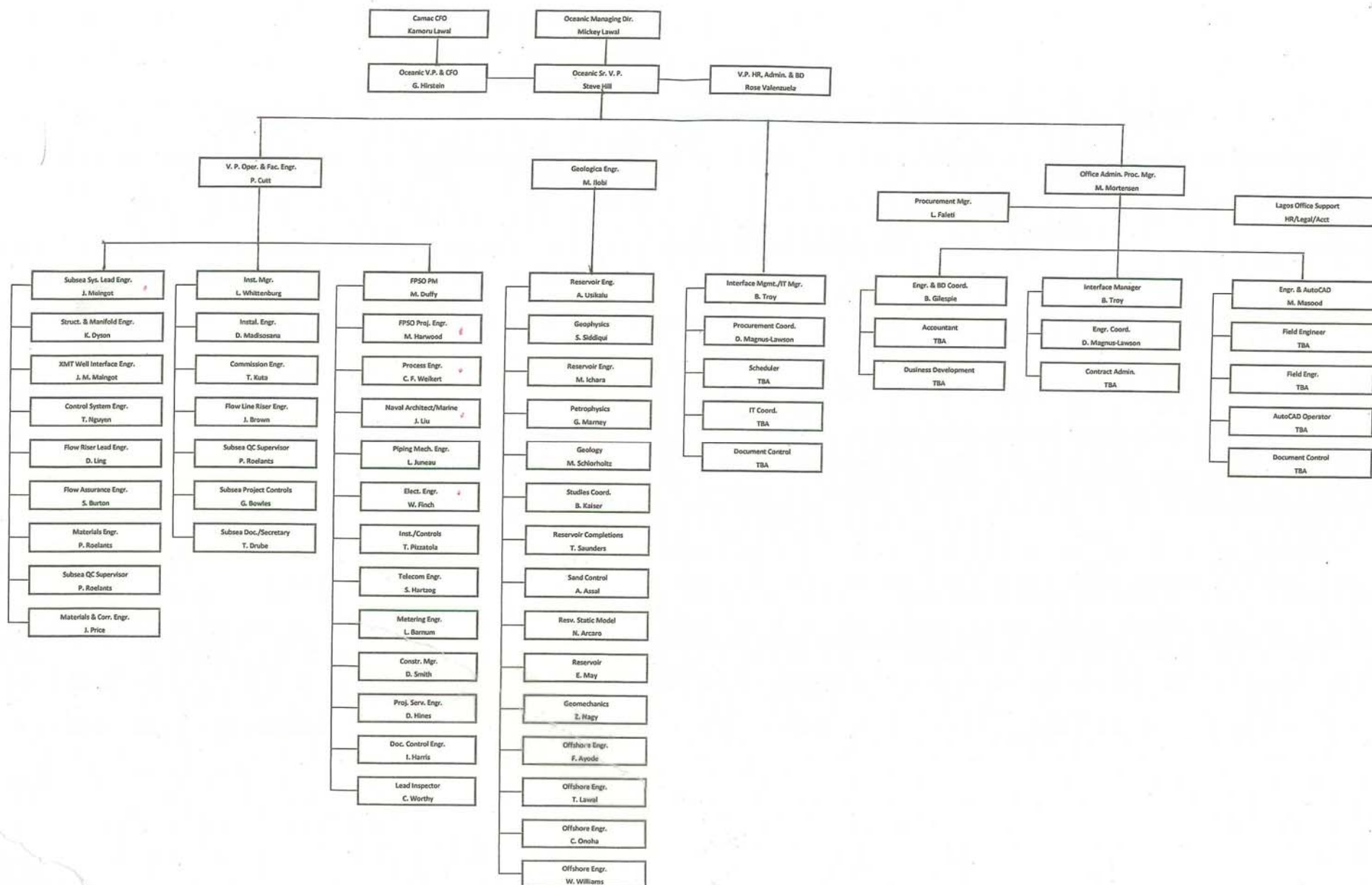
Eni Exploration & Production division



Eni's Way

FEED ORGANIZATION 2007

OCEANIC TECHNICAL RESOURCES & PROJECT SERVICES

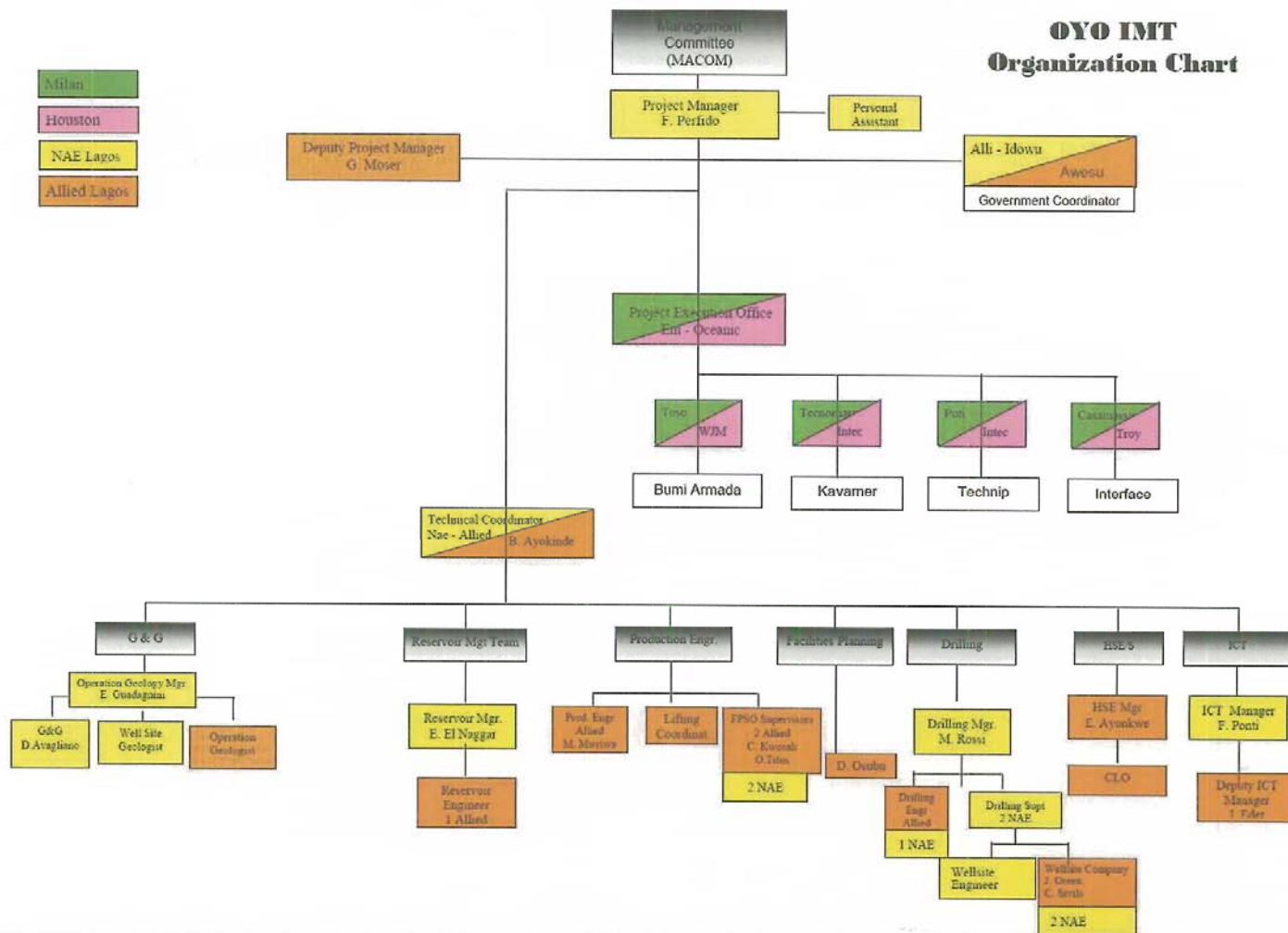


RESPONSIBILITY MATRIX 2006-2008

| Codes: | Bidder | B | Allied | A | | | | | | | | |
|-----------------------------------------|-------------------|----|--------|---|-----------------------|-----------------------|----------|---------|---------------------------|---------|---------------|---------|
| | Contractor | C | NAE | N | | | | | | | | |
| | Oceanic/Fairwinds | OF | WJM | W | | | | | | | | |
| | | | | | Prepare/ Recommend | Project Management | Engineer | Procure | Provide | Install | Review/ QA | Approve |
| 1 Pre-Award | | | | | | | | | | | | |
| RFO Documents | | | | | OFW | | | | | | A | A, N |
| Submit Bids | | | | | | | | | B | | | |
| Analyze Bids | | | | | OFW,A | | | | OFW | | A, N | |
| Negotiate | | | | | | | | | A, N | | | |
| Award/Sign Contract | | | | | | | | | N | | A | N |
| 2 Project Management | | | | | | | | | | | | |
| Execution Plan | | C | | | W | | | | C | | OF | A, N |
| WBS | | C | | | W | | | | C | | OF | |
| Milestones & Schedule | | C | | | W | | | | C | | OF | |
| Progress Reporting | | C | | | W | | | | C | | OF | |
| HSE | | C | | | W | | | | C | | OF | A, N |
| QA/QC | | C | | | W | | | | C | | OF | A, N |
| 3 FPSO Hull & Marine Systems | | | | | | | | | | | | |
| Any Required Modifications/Upgrades | | | | | W | | C | C | C | | OF | |
| Surveys | | | | | W | | | C | C | | OF | A, N |
| Classification | | | | | W | | | C | Classification Society | | OF | A, N |
| Hull & Marine Systems Documentation | | | | | W | | | | C | | OF | |
| 4 FPSO Production Systems | | | | | | | | | | | | |
| Process Systems/Including Flare | | | | | W | | C | C | C | C | OF | |
| Utility Systems | | | | | W | | C | C | C | C | OF | |
| Production System Tests/Inspection | | | | | W | | C | | C | | OF | |
| Production Systems Documentation | | | | | W | | | | C | | OF | |
| 5 Offloading System | | | | | | | | | | | | |
| Offloading Concept | | C | | | W | | C | | | | OF | A, N |
| Offloading System | | | | | W | | C | C | | C | OF | |
| Offloading Procedures | | C | | | W | | | | C | | OF | A, N |
| 6 FPSO Mooring System | | | | | | | | | | | | |
| Mooring Lines/Chains | | | | | W | | C | C | C | C | OF | |
| Anchors/Anchor Piles | | | | | W | | C | | C | C | OF | |
| SOIL Boring/Geotechnical | | | | | W | | | | C | | OF | |
| Bottom Survey | | | | | W | | | C | C | | OF | |
| 7 FPSO Transportation to Site | | | | | | | | | | | | |
| Environmental Condition/ Transit Route | | | | | | | | | C | | | |
| Transportation Analysis | | | | | W | | C | C | C | | OF | |
| Transportation Specification | | | | | W | | C | C | C | | OF | A, N |
| Transport | | | | | | | C | C | C | | | |
| Import Permits | | | | | | | | | | | | |
| 8 FPSO Installation | | | | | | | | | | | | |
| Installation Plan | | C | | | W | | C | | C | | OF | A, N |
| Installation Procedures | | | | | W | | C | C | C | C | OF | |
| Install FPSO | | | | | | | | | | | | |
| 9 Subsea systems | | | | | | | | | | | | |
| Production Trees | | | | | | | | C | C | C | Intec | |
| Tree Control System at Tree | | | | | | | C | C | C | C | Intec | |
| Umbilical Termination | | | | | | | C | C | C | C | Intec | |
| Topside Control Unit | | | | | | | C | C | C | C | Intec | |
| Topside Hydraulic Power Unit | | | | | | | C | C | C | C | Intec | |

IMT ORGANIZATION 2008

Integrated Management Team



OML 120-121 TECOM No7 10th June 2008

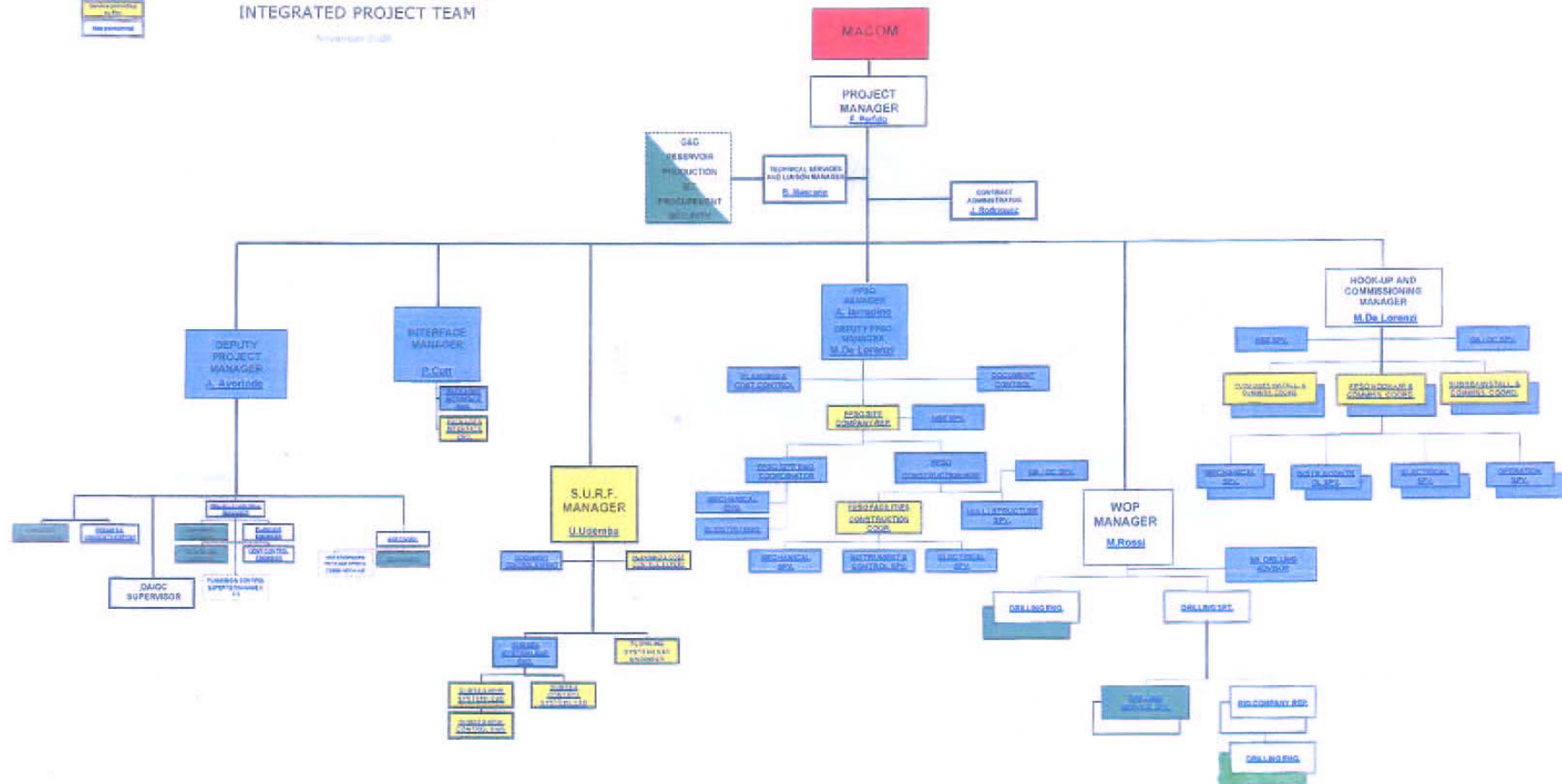
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Eni Exploration & Production division



Eni's Way¹⁴

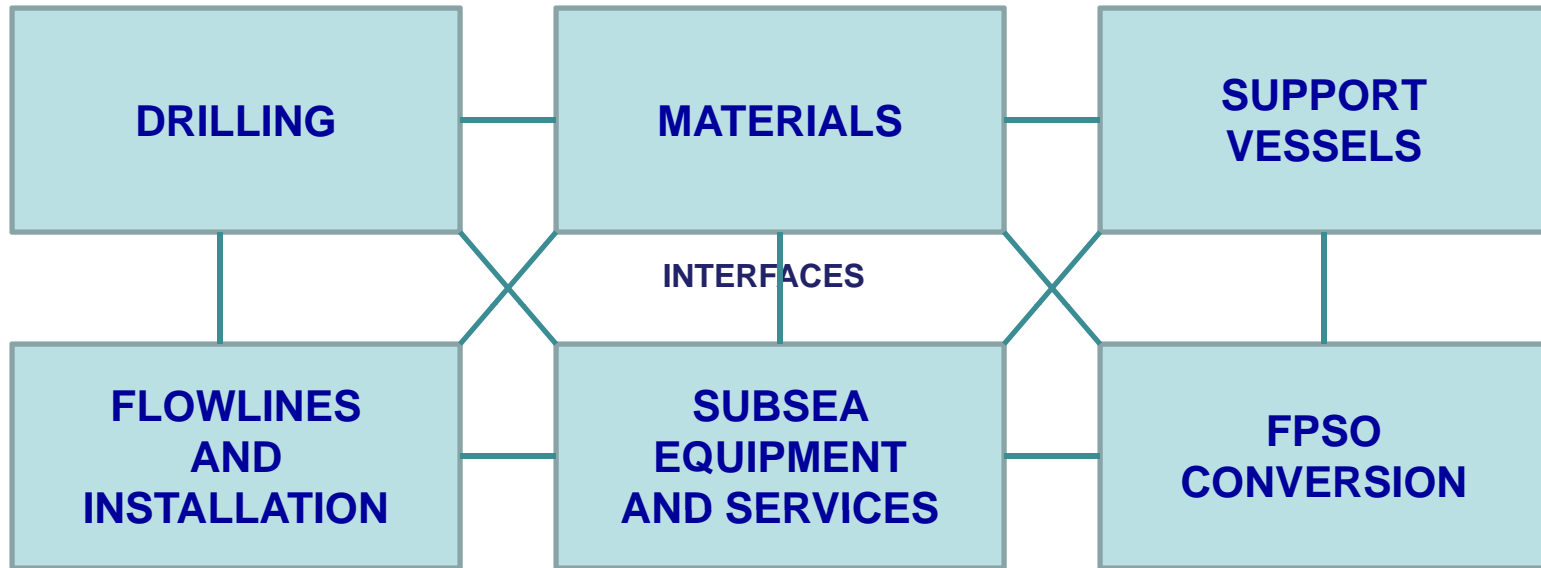
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CONTRACTING PHYLOSOPHY

PACKAGES AND INTERFACES



- LUMP SUM TURN KEY FOR MATERIALS
- DAY RATES AND HOURLY RATES FOR SERVICES
- COST PLUS FOR DRILLING/PRODUCTION EXPENDABLES

TOPSIDES DELIVERY SCHEDULE



OYO FPSO SURVEILLANCE
Week ending 13 Feb 09

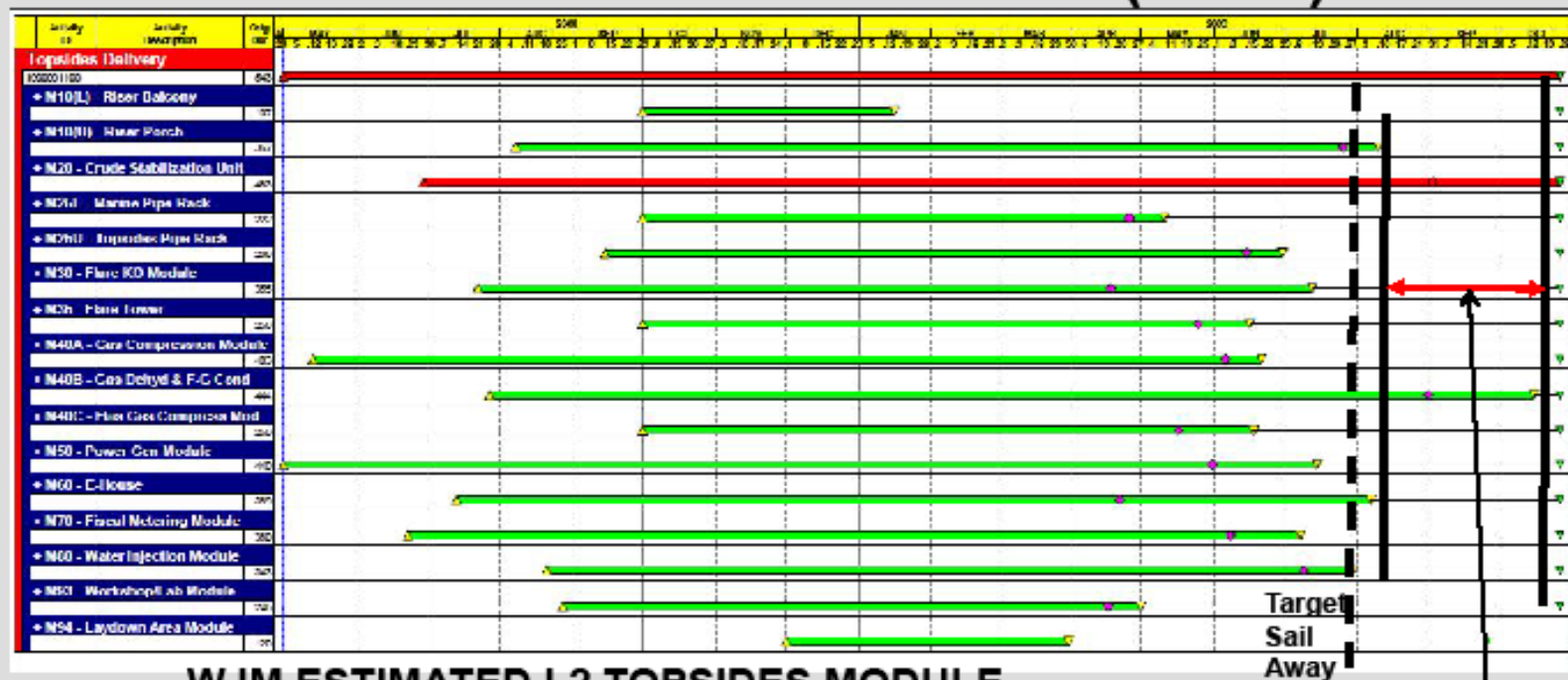


Nae



Allied Energy Resource Nigeria Ltd.

PART 2 – TOPSIDES DELIVERY (Cont.)



**WJM ESTIMATED L2 TOPSIDES MODULE
DELIVERY SCHEDULE**
–Procurement through Pre-commissioning

OVERVIEW OF PROJECT MANAGEMENT INTERFACES

- TOTAL PROCUREMENT AND CONTRACTING
1 BIL USD IN 36 MONTHS
- 7 MAIN CONTRACTORS IN 5 DIFFERENT COUNTRIES
- 158 VENDORS, 63 SUBCONTRACTORS, 27 DIFFERENT
MANUFACTURING LOCATIONS IN 14 COUNTRIES
- 7 FABRICATION SITES IN 5 DIFFERENT INTERNATIONAL
LOCATIONS
- 23 NATIONALITIES
- 5 FOREIGN LANGUAGES
- 22 MONTH EXECUTION PLAN
- 1723 INTERFACES

LESSONS LEARNED

- DON'T LEAVE THE SHIPYARD UNTILL ALL WORK THAT WAS CONTRACTED IS DONE
- PUT MORE PROJECT AND COST CONTROL ENGINEERS AT THE VARIOUS SITES, AND YOU SAVE MILLIONS
- CENTRALIZE INSPECTION PLAN FOR VENDORS, MANUFACTURES AND FABRICATORS
- CENTRALIZE MANAGEMENT REVIEWS AND STANDARDIZE REPORTS; MONDAY 6AM WORLDWIDE VIDEOCONFERENCE MEETING WITH ALL STAKE HOLDERS
- MAKE BETTER USE OF "SHARE POINT" FOR ARCHIVING DOCUMENTS
- EXPAND THE USE OF VIDEO CONFERENCING AT ALL SITES
- DON'T CHANGE ORGANIZATION IN THE MIDDLE OF THE PROJECT
- WE JUST MOVED THE CHAIRS WITH SAME PEOPLE IN THEM
- FOCUS ON CAPEX COST SAVINGS AND NOT TRY TO SAVE MANHOURS ON PM; PM COSTS WERE CUT 50% AND CAPEX WENT UP BY 400 MIL.