

Remote Control & Monitoring of a Not Permanently Manned Offshore Platform

Les Hastings

Director Global Project Pursuits

Esbjerg DK



Introduction - Important Information?

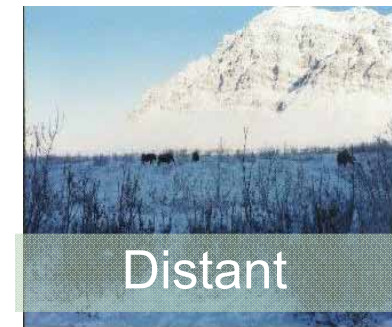


Introduction: IO and 4D Operations

Integrated operations (IO) refers to new **work processes** and ways of performing **oil and gas** exploration and production, which has been **facilitated** by **new information and communication technology**. Multi-discipline **collaboration** in plant operation is one example. IO has in a sense also taken the form of a **movement for renewal** of the **oil and gas** industry.

In short IO is **collaboration** with **production** in focus

<http://www.integrated-operations.co.uk/> "Integrated Operations is about ensuring people, processes and technology work much more efficiently together"



Introduction: Solan Development

- UK CS – West Shetland Isles
- 137m water depth
- Peak Flow of 28,000 Bpd
- Not Permanently Manned Installation (NPMI)
- Operated from Onshore Control Room (ONCR)



Site: SOLAN Field, 130km West of Shetland

Project:

- Main Electrical & Automation Contractor (MEAC)

Introduction: Key Project Requirements

- Main Electrical & Automation Contract (MEAC) : An NPMI Oil Platform: fundamental O&M philosophies and key requirements:
 - Safety: Asset & Environment (DECC), Personnel (HSE)
 - Reliability: Redundancy, Predictive Maintenance
 - Integration: Numerous systems must work seamlessly
 - Execution: Numerous companies must work seamlessly
 - Commercial & Technical Risk Mitigation: One company guarantees it will ALL work
 - Economics: Marginal Oil & Gas Fields become viable


Solan Development Project Overview





CHRYSAOR


[click here](#)

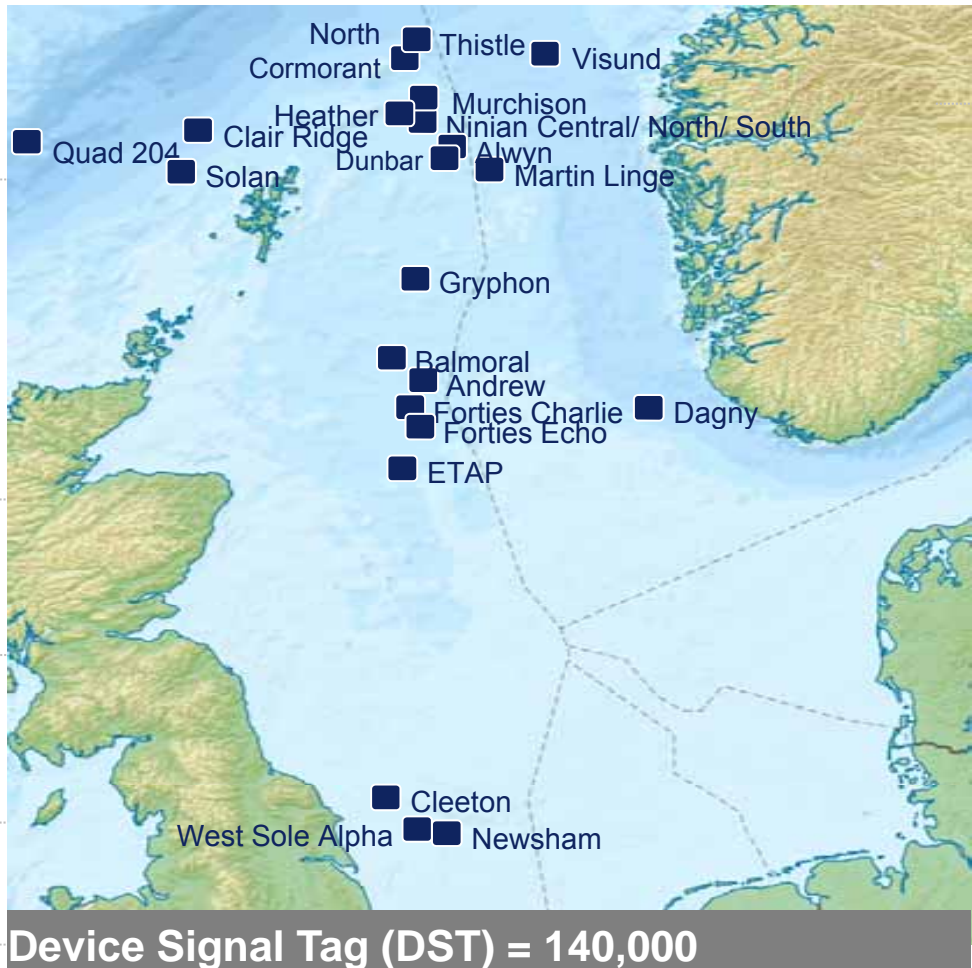
Emerson North Sea Automation Activity


- 
 - Forties Alpha
 - Forties Bravo
 - Forties Charlie
 - Forties Echo


- 
 - Andrew
 - Clair Ridge
 - Cleeton
 - ETAP
 - Newsham
 - Quad 204
 - West Sole Alpha


- 
 - Ninian Central/N/S
 - Murchison


- 
 - Heather
 - Thistle




- 
 - Gryphon FPSO

- 
 - Balmoral
 - Solan

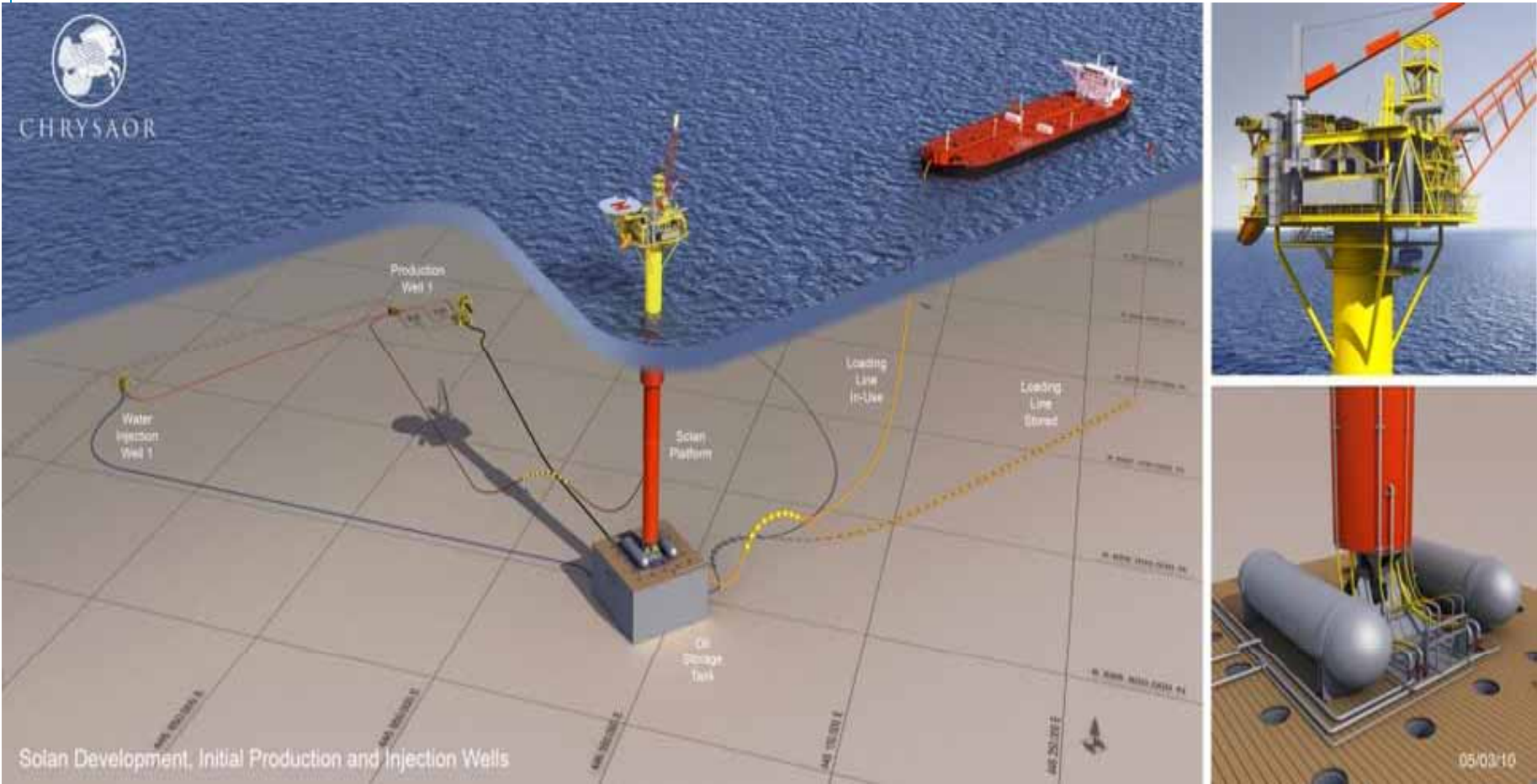
- 
 - Dagny
 - Visund

- 
 - North Cormorant

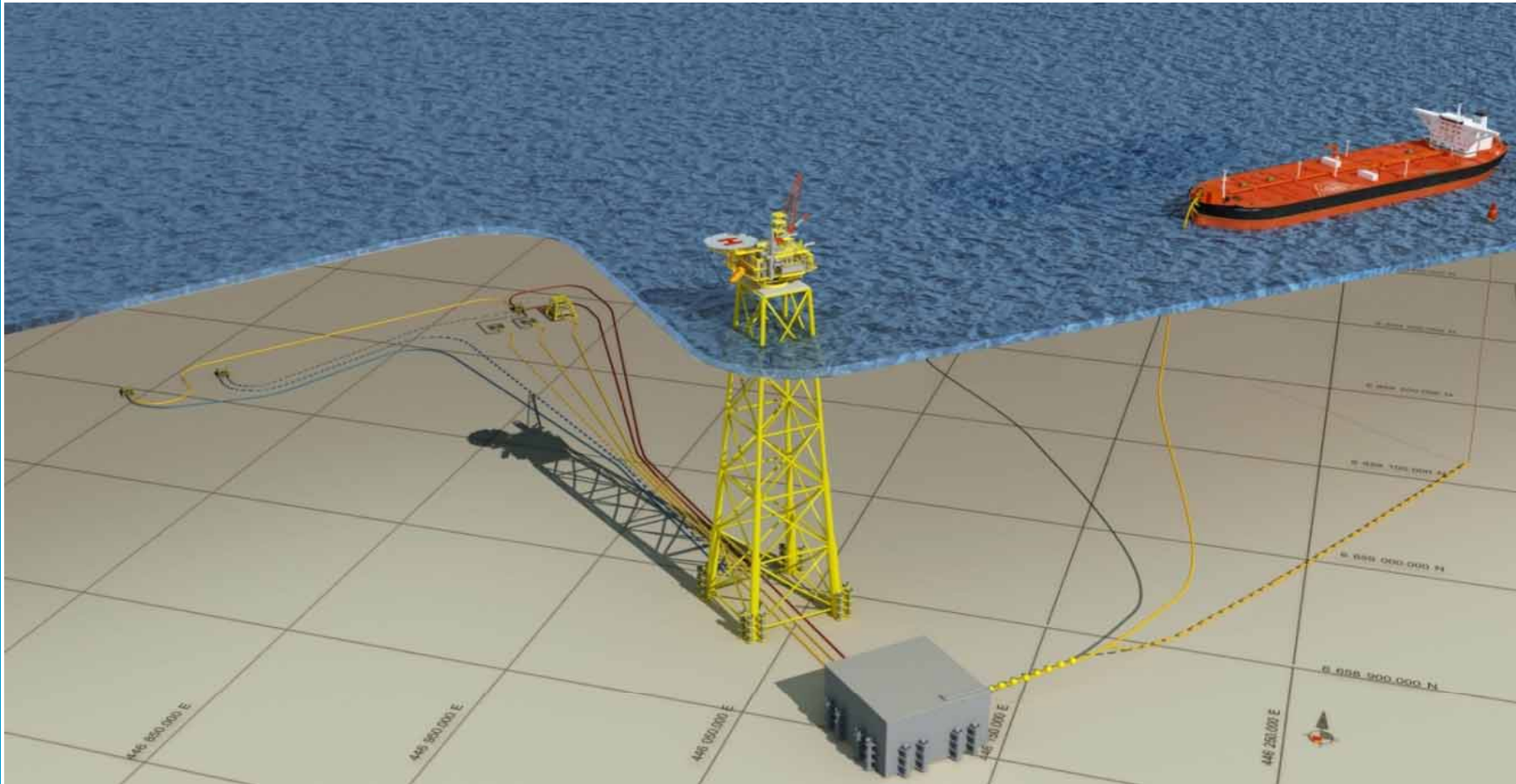
- 
 - Alwyn
 - Dunbar
 - Martin Linge



Solan Overview: Articulated Tower 2010



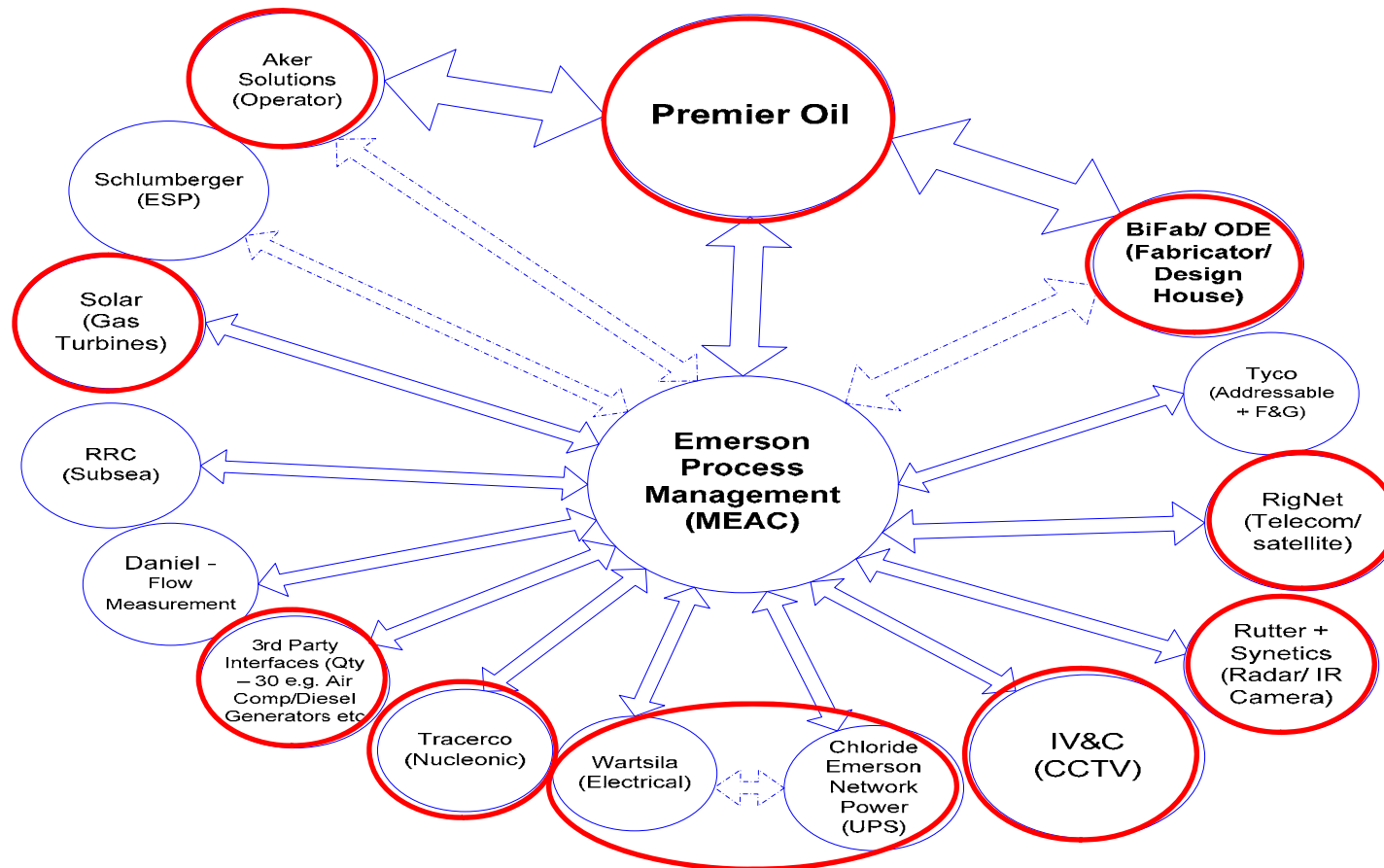
Solan Overview: Jacket/Topside 2011



Emerson: The MEAC Delivery

- Project Management, Planning & Scheduling
- Technical Consultancy, Design Reviewer & Quality Auditing of:
 - Emerson, UK: ICSS, Instrumentation, Machinery/Asset Health, UPS
 - Wartsila, Norway: Electrical: MV/LV/PMS
 - RigNet, UK: Telecommunications
 - Tracerco, UK: Nucleonic Topsides & Subsea Tank Profiler
 - IVC, USA: CCTV / Oil Spill & Intruder Detection
- Procurement, Expediting & Logistics of the Above Alliance Partners
- Site Support, Onshore & Offshore Commissioning and Long Term Support for Operations and Maintenance.

The Relationships



Emerson: Scope of Supply



Electrical: Scope of Supply



- 1 x MV 6.6kV **Switchboard**
- 2 x LV 440V Switchboards
- Distribution **Transformer** 6.6/440
- Power Management System (**PMS**)
- **Navigational Aids**
- Technical **Design** of: Emerson Chloride **UPS**
 - 2 x Dual Parallel 120kVA AC UPS NiCAD
 - 1 x Single DC UPS NiCAD



Telecoms: Scope of Supply



- Dual Redundant Onshore & Offshore **Satellite** Systems
- PAGA / **Telephone** (VOIP) / Dispatcher Console
- VHF Aero / Marine & UHF Marine **Radios**
- **Greenline** Tanker ESD / Artemis DARPS **Dynamic** Tanker **Positioning** Systems
- **Entertainment** System / Internet / Email
- **Aeronautical** Non Directional **Beacon**
- **Meteorological** System
- Rutter Radar / Synectics Thermal Camera: **Oil Spill & Intruder Detection** System

CCTV: Scope of Supply



- ATEX1 **PTZ** movable **Cameras** c/w Wash/Wipe
- Fixed Internal Cameras
- **Relay Server** Integration of Synectics Thermal Cameras & Rutter Radar: Oil Spill & Intruder Detection
- Offshore Relay Servers for Camera **Recording**
- Onshore Relay Servers for Camera Recording
- Relay Server **Integrates** directly with **DeltaV HMI**

FAT



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March 31, 2015
Slide 16



EMERSON

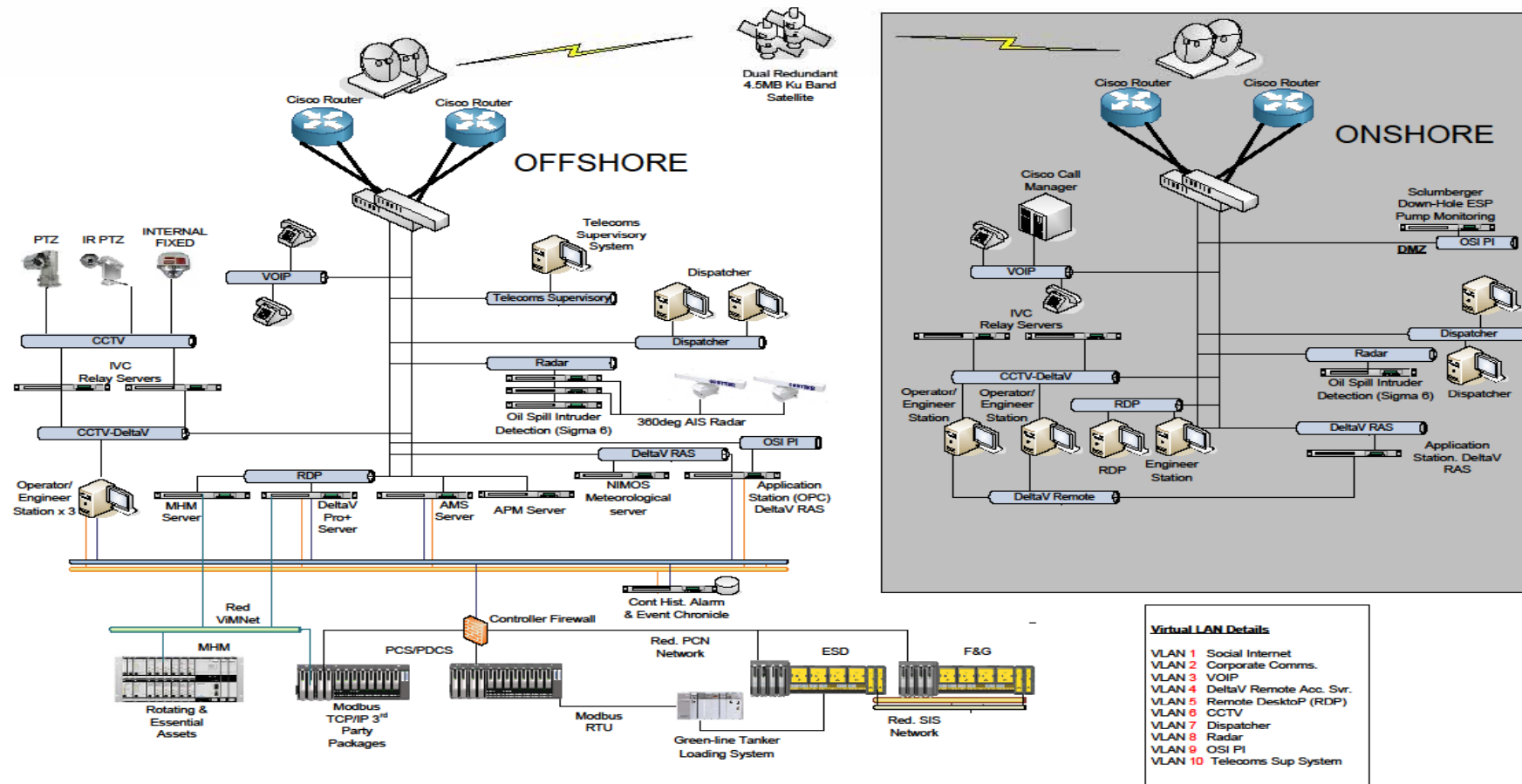
Level Profilers: Scope of Supply



- **Nucleonic Profilers** to determine sand, water, oil foam and gas contents for:
 - Topsides Separator Vessel 1
 - Topsides Separator Vessel 2
 - Subsea Tank

- Geiger Muller detectors **integrate** directly with **DeltaV controllers** that perform density **calculations**, vessel contents analysis and operator **graphics**

Solan Architecture



Project Timeline

- KO August 2012 – Post FEED
- DD complete, HFAT completed/delivered, CFAT Oct to Feb 14
- Required On-Site (Delivery to Fabricators) 30th Oct 2013
- Mechanical Completion November 2013 – jacket delay
- Site Acceptance, System Integration and Commissioning at Fab (From Dec 2013 to May 2014)
- Sail Away (May 2014)
- Final In Situ Commissioning (July to Sep 2014)
- 1st Oil (Q2 2015)



Lessons Learnt

- Engage your automation partner(s) early:
 - Maintain technology reviews – latest technology savings
 - ❖ Provide expert ‘handholding’ – not just to specification, but ‘best fit’?
 - ❖ Process designer not part of the team – ODE
- Project Control Team: PM/PA but need Engineering Manager!
 - ✓ Project Engineer invaluable – oversee technical advise commercial – cannot just leave to the Lead PCS/SIS/HW
- Modular Testing & Acceptance:
 - ✓ Expenses higher but saving in FAT using Portable Test Units & Teams at various locations
 - ✓ Simplify SIS testing from hardwired to softwired ~ trust IEC61511
- Relationship:
 - ✓ Alliance Partners not just ‘subs’
 - ✓ Being constructive and collaborative - have to gain not given trust!

Commendation: Reality of Solutions!

→ **From:** Mark Condren
→ **Sent:** 25 February 2014 09:52
→ **To:** 'John.Pattison@Emerson.com'
→ **Subject:** Solan Project

→ John

→ As the Solan project is gradually getting the point where we leave Leicester and relocate to the fabrication yard I would just like to thank the team from Emerson for their hard work and dedication to the Solan project.

→ It has been a difficult process with a high degree of changes and challenges constantly thrown at Emerson, but these have all been handle extremely well and the final product I am sure, will be a major benefit to the overall Solan development.

→ It has been a pleasure to work with everyone here, and I appreciate the way the team has worked together with Premier Oil personnel with the combine goal of achieving the targets set by the project. It hasn't always been easy, but in the end it has been very rewarding.

→ I look forward to continuing working Emerson as move forward from system build/development into transforming the Solan platform into an operating asset for Premier Oil and partners.

→ **Best Regards**

→ **Mark Condren**

→ C&I Engineer

→ Solan Development Project

→ UK Business Unit

→ **please consider the environment - do you really need to print this email?**

Project Goals

- Minimize Unscheduled Trips to the Field:
 - Predictive Diagnostics and Maintenance
- Minimize Personnel Exposure
 - Safety and Cost Saving
- Simplified Technical & Commercial Contract:
 - Emerson responsible for entire MEAC Scope & Delivery
 - ‘One stop shop’ approach
- Seamless Integration:
 - Project Teams / World Areas
 - Quality focused, coordinated flawless delivery of design

Summary

- **Remote** monitoring of a not permanently manned platform (NPMP) is **achievable today** with complete integrated operations including **CCTV/Thermal Camera's** to ensure the **asset** is remotely **protected**.
- **Technology** available today **enables** smaller fields to be commercially **viable** with **environmental** and **safety** design approved by UK Government **agencies**.

What is Happening Now?

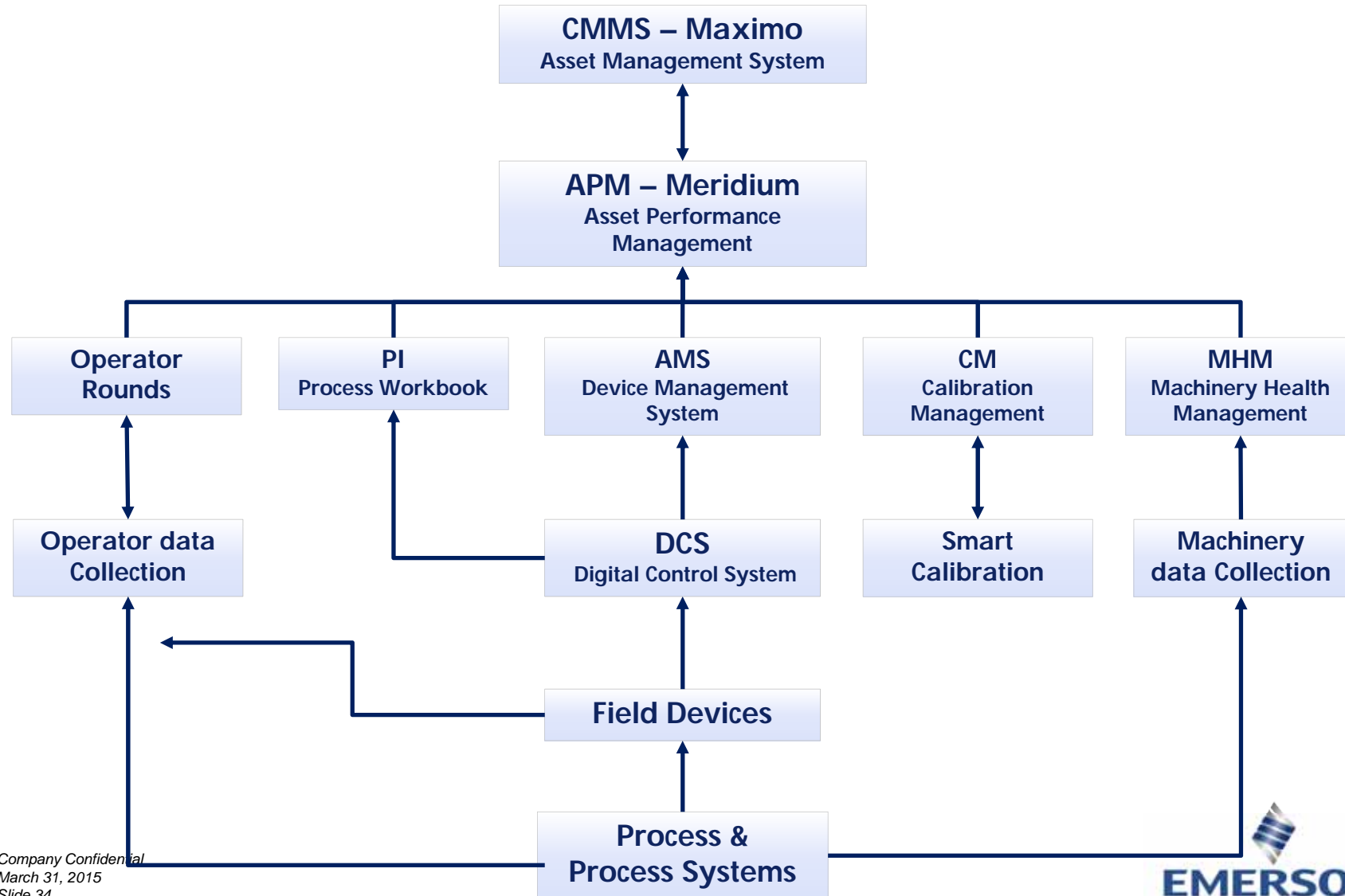
- Reliability solutions – Asset Performance Management
- Lifecycle Services (Aberdeen)

Asset Performance Management

The Five APM Work Processes and enabling software



Asset Management Architecture



Lifecycle Services (Delta V)

- BPCS/SIS / AMS /APM
 - Software Support (Guardian 24/7/365)
 - Emergency Response
 - System Health check service (PM)
 - Bonded Spares
 - Resident Engineering
 - System Health Monitor

Lifecycle Services (Measurement Devices)

- DP Flow / GWR / Temp / H2S / Press / Level /
Mag Flow / VA Flow / Coriolis / DO / MPFM /
WCM / SAM / S600 flow computer
 - Emergency Response
 - Diagnostics
 - Calibrations
 - Maintenance Visits
 - Spares
 - Lifecycle Care Performance (SAM & MPFM)

Lifecycle Services (UPS)

- Chloride Power Uninterruptable Power Supply
 - Priority Emergency Response
 - 24/7 Technical Support
 - Software/Firmware Updates
 - Spares

Lifecycle Services (Other Companies)

- Tracerco (nucleonic)
- IVC
- Wartsila
- Rutter (intruder detection system)
- Synectics (Thermal imaging)
- Tideland (NAVAIDS)

→

Questions/Comments?



Let's Connect

→ Emerson

- www.emerson.com
- Les.hastings@emerson.com
- +44 7557 566270