



**Maersk Ngujima-Yin FPSO**  
**Down man of Non-Essential Personnel due**  
**to loss of Emergency Power**  
**6<sup>th</sup> July 2008**

**Ian Davison**  
**Maintenance Superintendent**  
**(Acting Operations Manager on day of Incident)**  
**Maersk Ngujima-Yin FPSO**



### MAERSK NGUJIMA-YIN FPSO

- Sailed from Keppel Yard, Singapore 31<sup>st</sup> May 2008
- Arrived on Vincent Field 9th June 2008
- Hooked up to Buoy (Anchored) 1st July 2008
- Hook Up and Commissioning Activities ongoing
- No Hydrocarbons onboard
- 80 Persons on board
- Nan Hai VI carrying out drilling operations in Field.

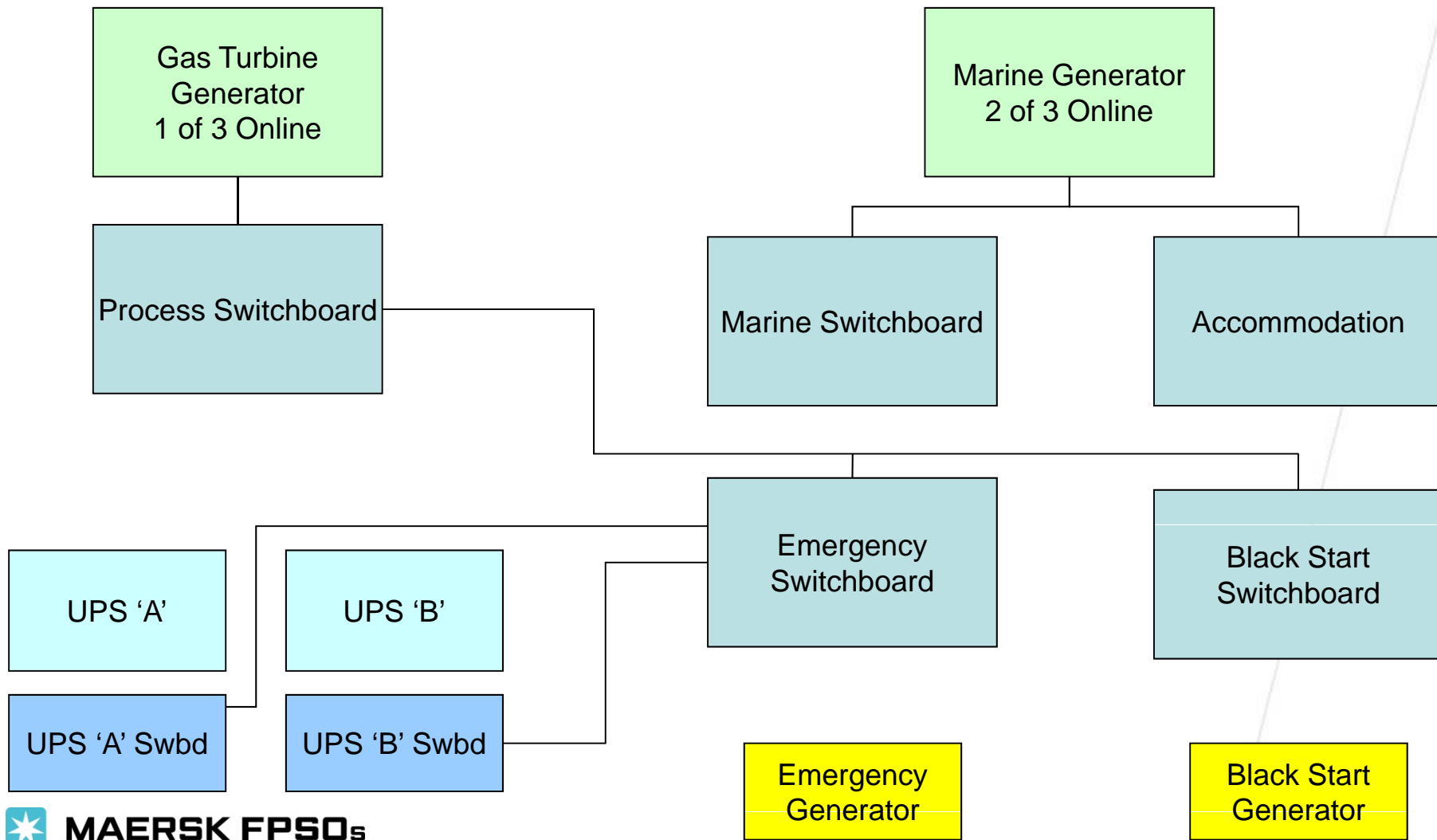


## **Power Generation and Distribution Status Prior to Incident**

- Marine and Accommodation Services being supplied from 2 off Marine Generators in Engine Room
- Process and Emergency Power being supplied by 1 off Gas Turbine Generator Topsides

## **Uninterrupted Power Supply (UPS) System Status Prior to Incident**

- UPS 'A' was in Maintenance By-Pass.  
Several components had failed on 1st July 2008
- UPS 'B' was in Maintenance Bypass.  
Unit bypassed when smell of arcing noticed 3rd July
- UPS Vendor due to mobilise with spares 7th July





## Defective Safety Critical Equipment Risk Assessment for Failed UPS Systems completed offshore 4<sup>th</sup> July

Conclusion was that:

‘..having no hydrocarbons onboard, there was adequate secondary means of power to support the ongoing hook up and commissioning activities..’

Concurrence by Onshore Management Team



6<sup>th</sup> July 2008, 06.55

Call from Maersk Duty Manager to Maersk Ngujima-Yin  
Operations Manager,

‘..received a call from Nan-Hai VI that  
Ngujima-Yin has **‘blacked out’** and has only  
1 portable VHF radio working.  
Communications are on VHF via Nan-Hai VI  
radio room..’



### Status onboard the FPSO:

- All Personnel were at Muster Stations
- **No power to Integrated Control and Safety System (ICSS) system**
- All ICSS monitors were off.
- No emergency power
- External Communications via portable VHF radio (to Nan Hai VI) or 3G mobile phone.
- Normal power to Marine and Accommodation services was online (**this was not conveyed to Onshore Team**)

### Actions Taken:

- Inlecs split into 2 groups:
  - Start emergency generator
  - Restore power to ICSS
- 2 Personnel dispatched to carry out fire check of accommodation (no F&G System)

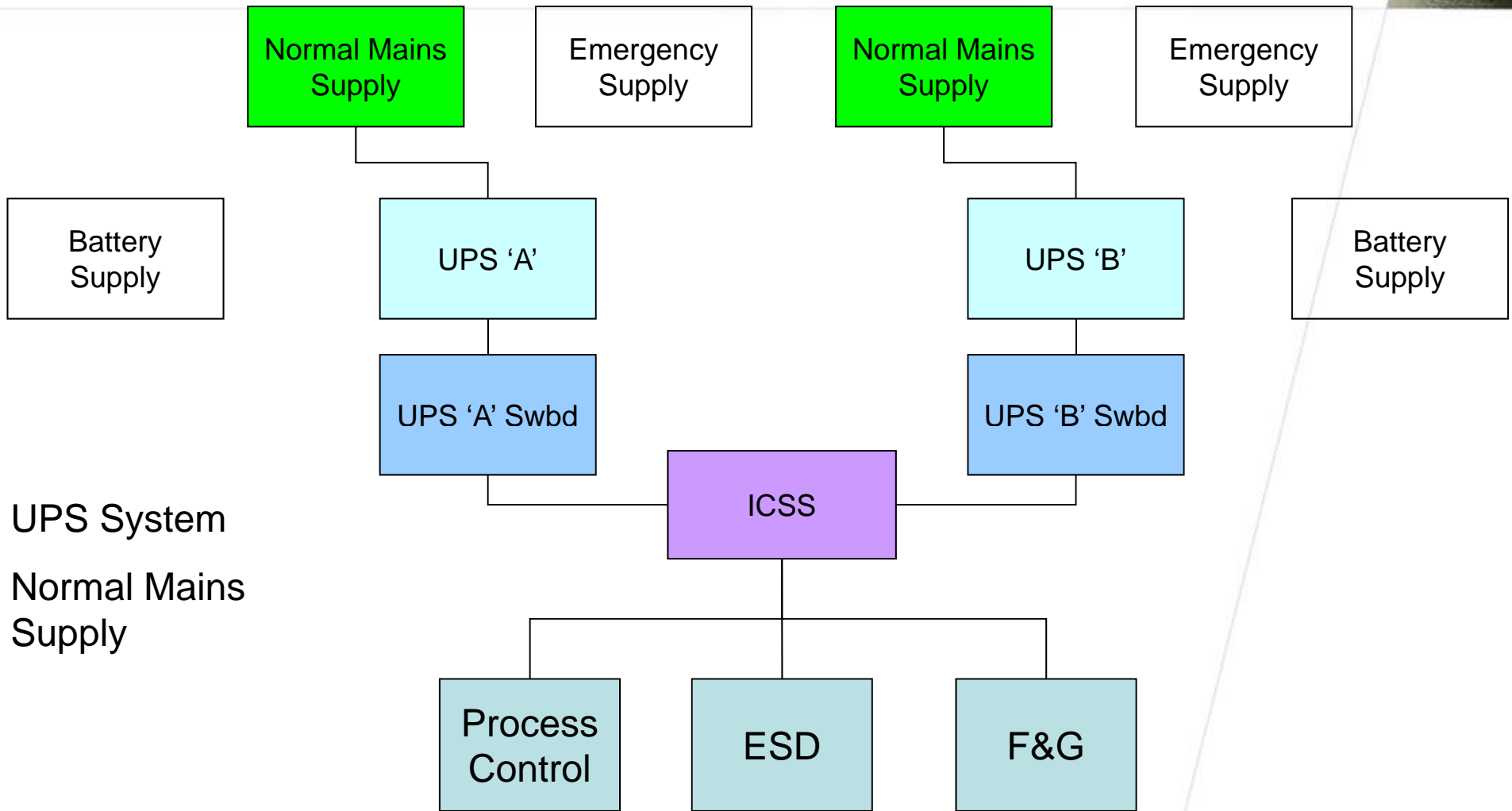


### **Following Mobilised to Maersk Drilling Office:**

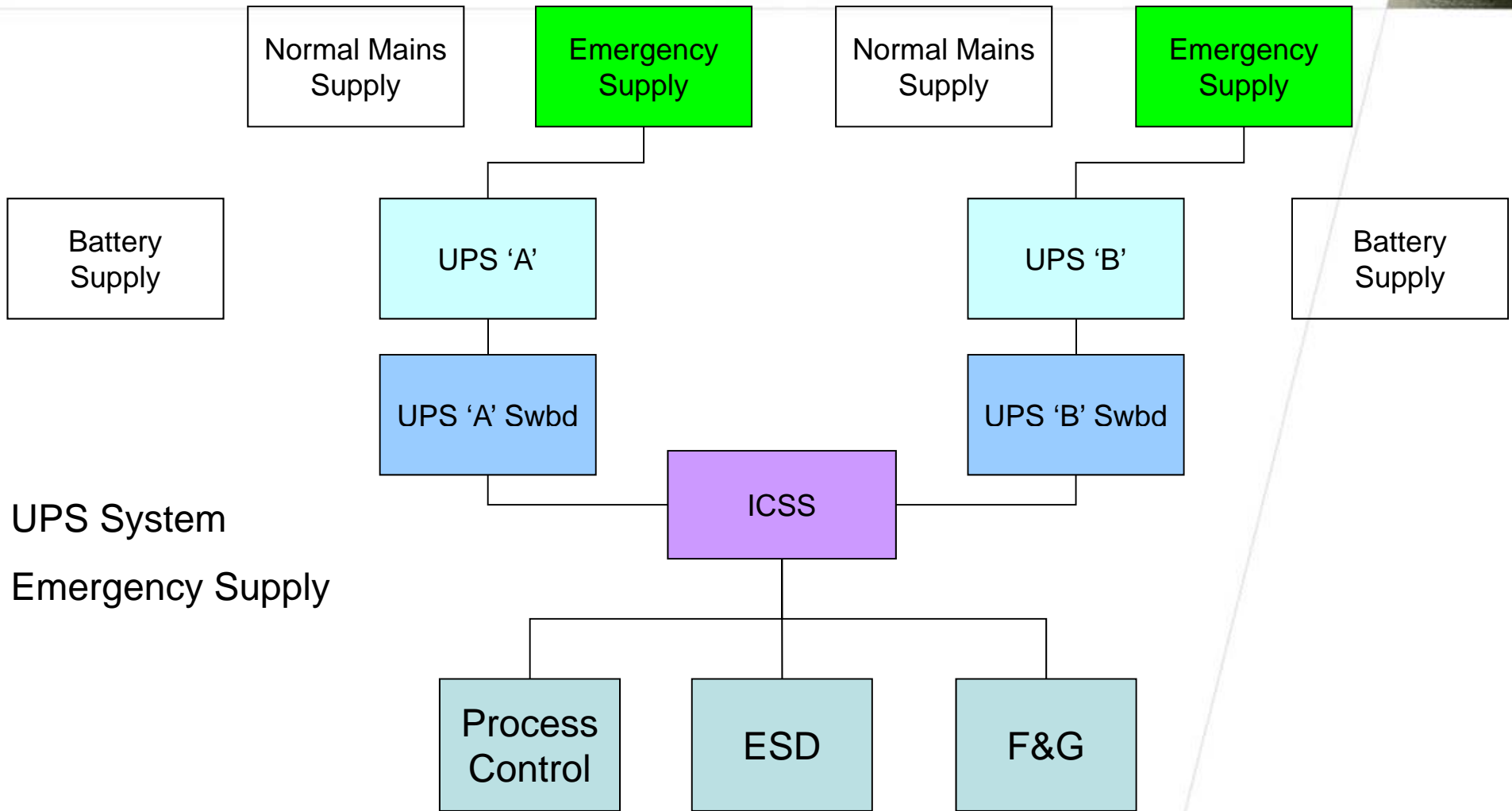
- Operations Manager Drilling and Production
- Operations Manager (Acting) Maersk Ngujima-Yin

### **Following Mobilised to Keppel Yard, Singapore:**

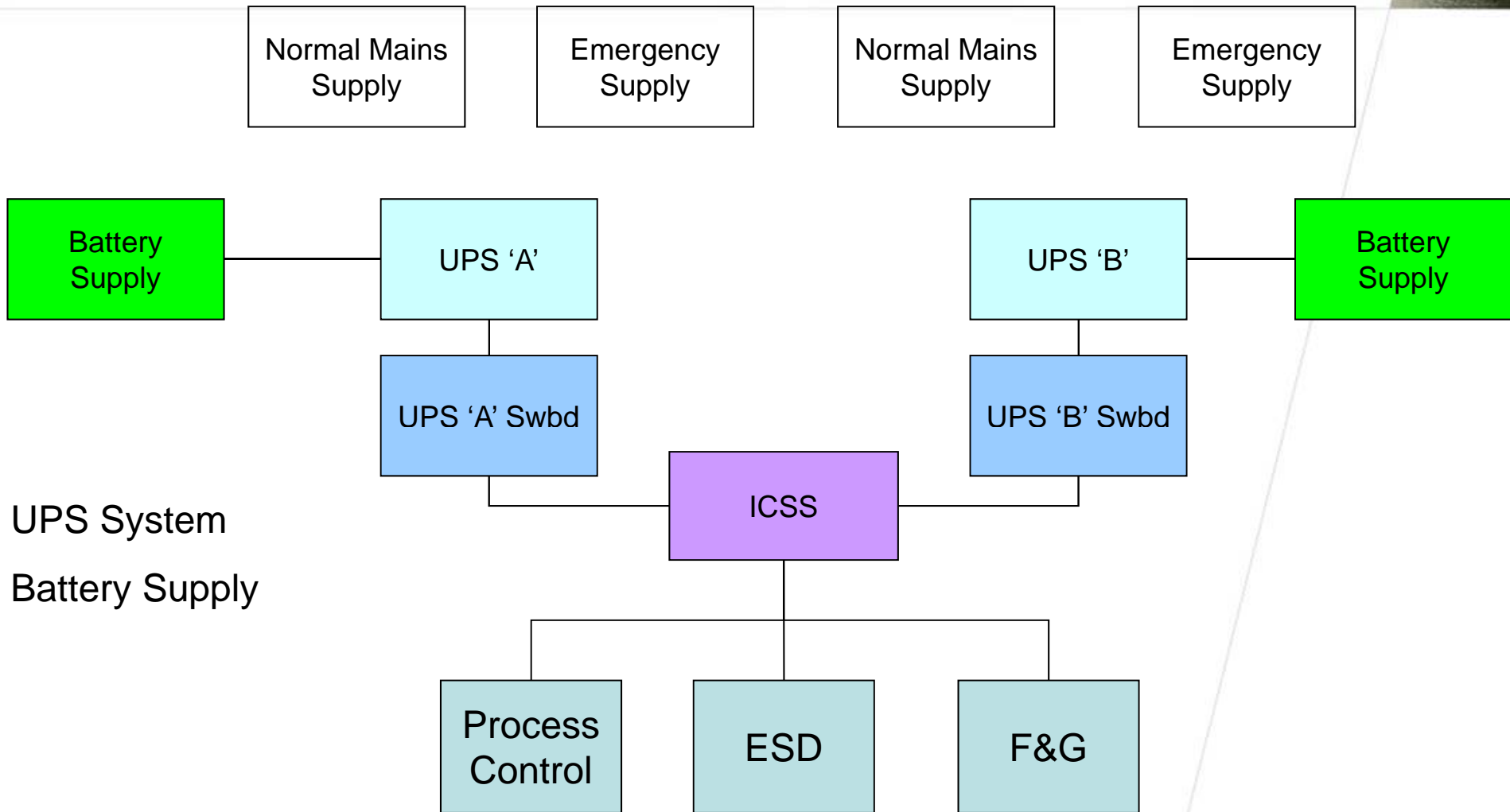
- Project Senior Electrical Engineer - Technical Support



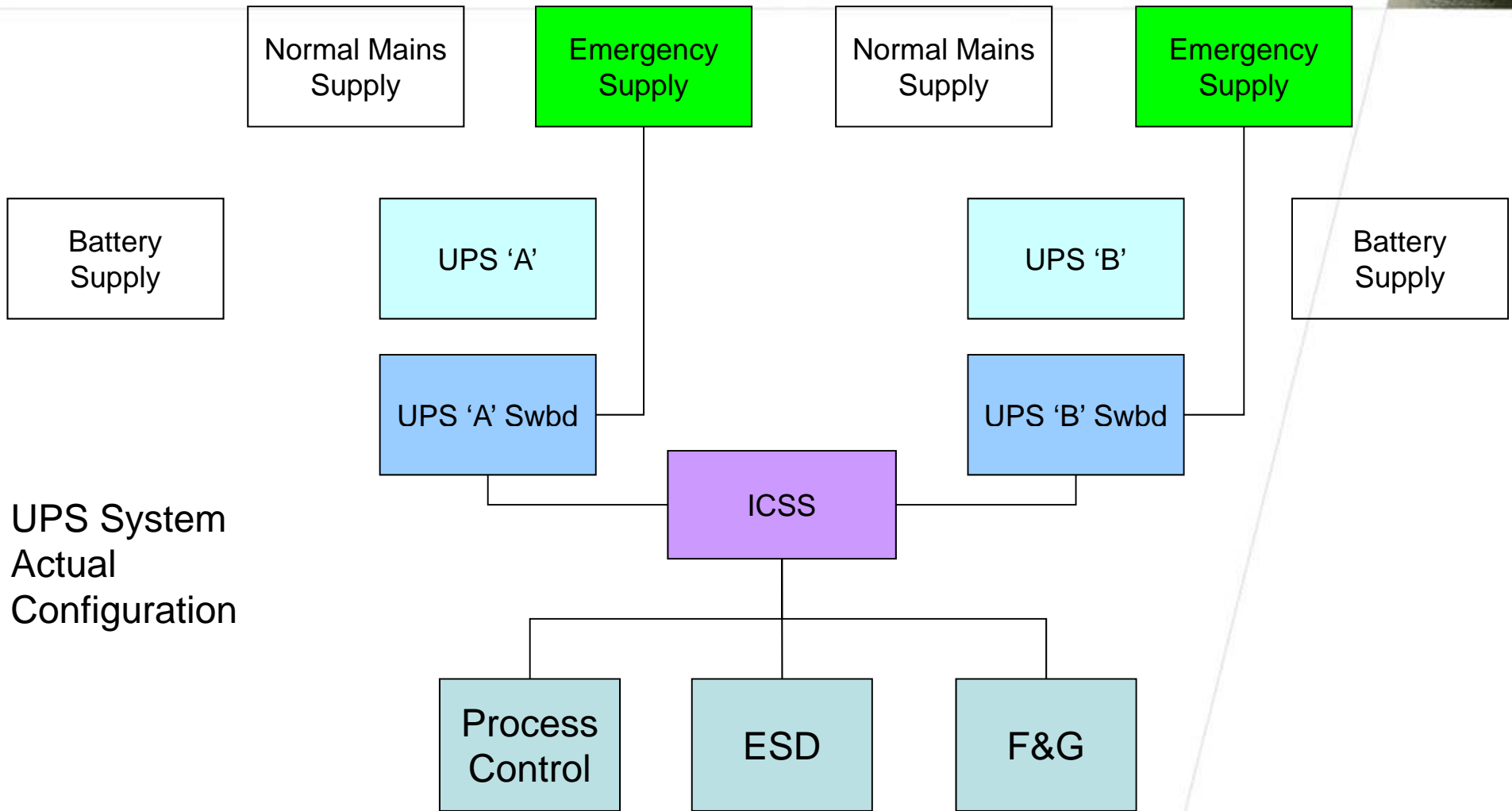
UPS System  
Normal Mains  
Supply



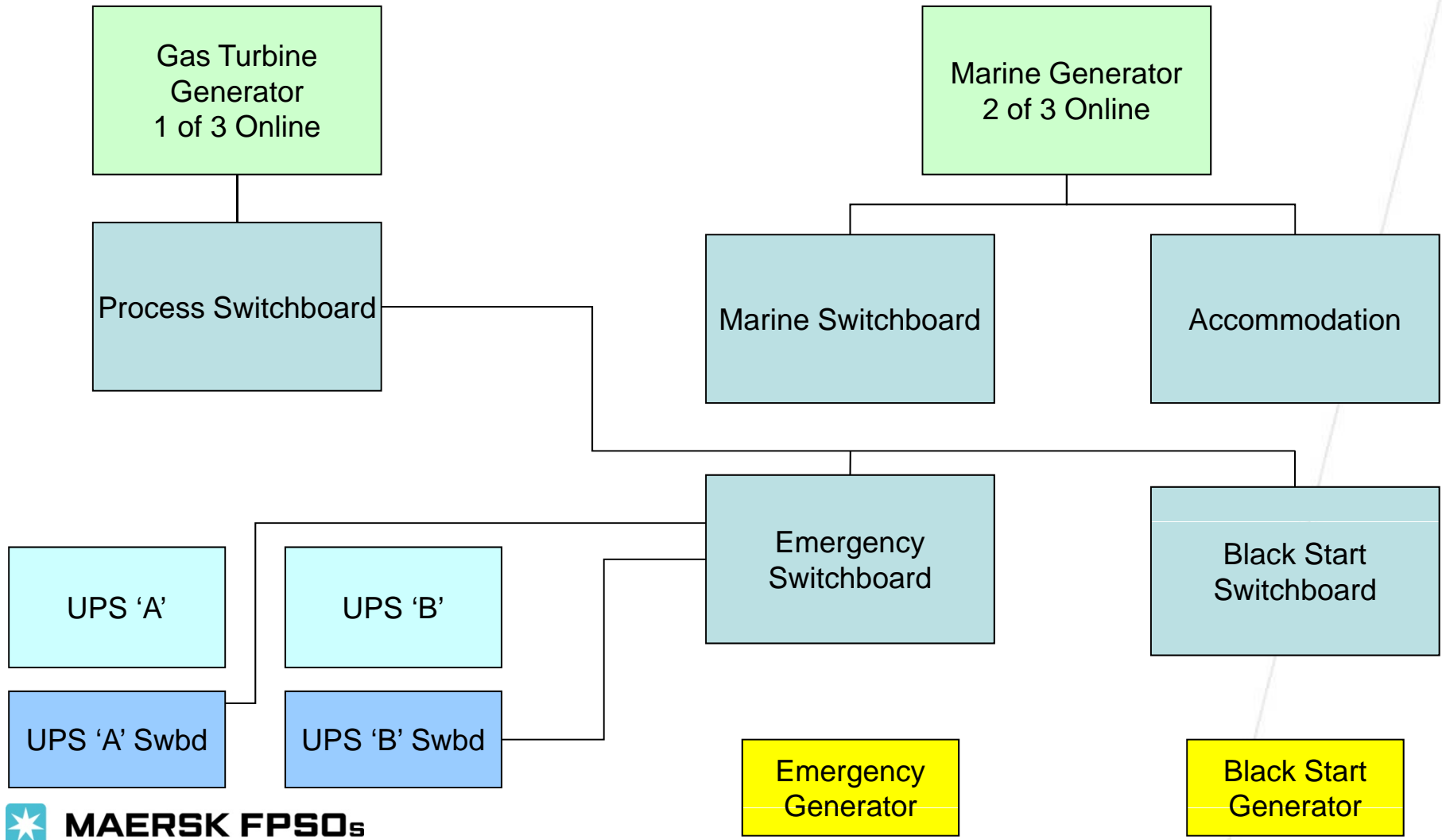
UPS System  
Emergency Supply



UPS System  
Battery Supply



UPS System Actual Configuration





## Status Onboard FPSO

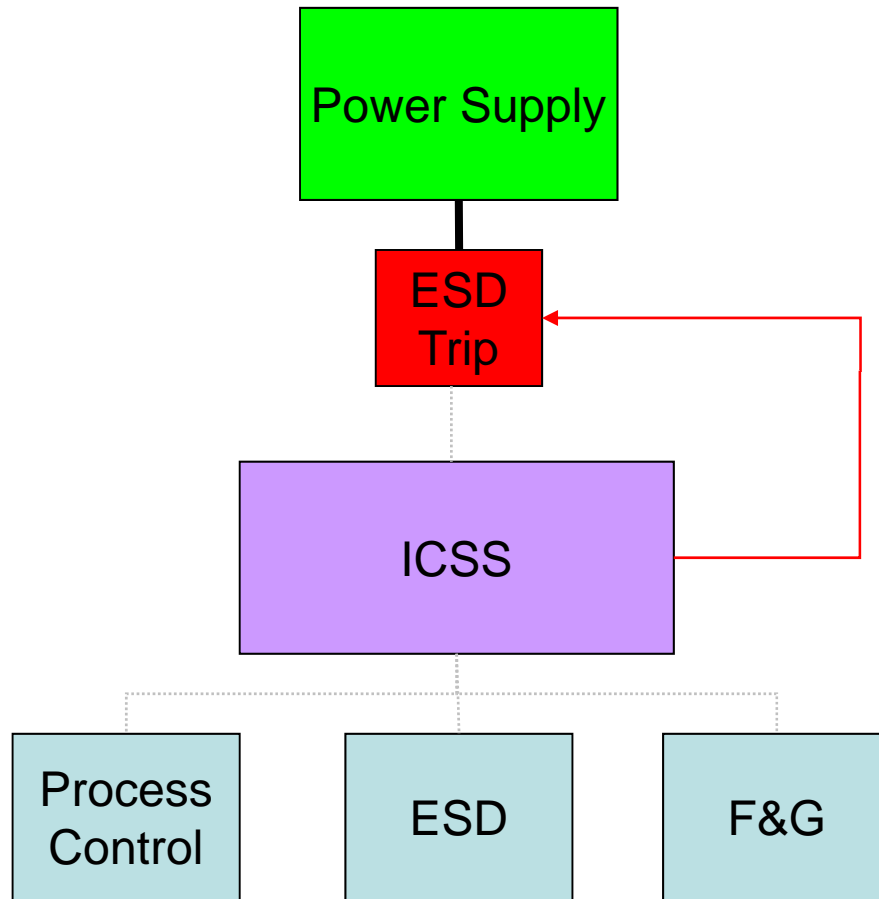
07.50 (1 hour after Incident)

- Unable to start Emergency Generator due to ESD Trip – even though using ESD override key switch
- Black Start Generator started with Hydraulic Start but unable to close breaker (Batteries were u/s – new ones were on order)
- Still unable to restore Emergency Power or ICSS
- External communications only available via VHF to Nan Hai VI or 3G mobile phone – Cause and Effect Anomaly
- Continuing with attempts to restore emergency power and ICSS.
- **FPSO Operations Superintendent Contacted Maersk Duty Manager and requested down-man of 40 non-essential personnel.**
- Normal power to Marine and Accommodation services **(this was not conveyed to / Understood by Onshore Team)**



## Onshore

- Woodside Communications Centre contacted. Request made for down man of 40 Non-Essential Personnel
- Woodside Emergency Response Team Mobilised to implement the request
- 1<sup>st</sup> Helicopter to pick up Iridium Phone from Nan-Hai VI and deliver to MNY to allow external phone comms.





## Status onboard FPSO

09-25 (1 hr 35 mins after incident)

- Black Start Generator running but unable to close breaker to switchboard.
- Emergency Power and ICSS still not restored
- Alternative method of supplying power to ICSS identified - Approved by Maintenance Supervisor, Operations Superintendent and Onshore Electrical Engineer



## Status onboard FPSO

09-50 (2 hours after incident)

- Modification carried out and ICSS rebooted
- ICSS Available
- ESD reset
- Emergency Power Restored
- Power restored for external communications



## Decision taken to continue with down man of Non-Essentials, as:

- Emergency Supplies not secure
- No UPS System
- True Status of normal power to Marine and Accommodation Services not understood by Onshore Team

## Down man of non-Essentials

Helicopter on Deck:

11.05	8 Pax
12.07	8 Pax
12.55	8 Pax
13.15	8 Pax
14.26	8 Pax

## Agreed Criteria for up man:

At least one UPS System to be fully operational



## Incident Investigation

9<sup>th</sup> July Maersk HSEQ Manager and Woodside Senior Electrical Engineer mobilised to FPSO to Investigate Cause of Incident

### Findings:

- UPS Safety Critical Equipment Risk Assessment inadequate
- Loss of ICSS caused ESD trips to critical emergency equipment
- Incorrectly wired 'Black Start Mode' key switch for Emergency Generator
- Inadequate 'As-Built' Drawings
- Incorrect labelling on Black Start Generator Switchboard
- Emergency Generator Room Fire Damper Installation not complete
- Internal verbal communication was good
- External communications were restricted due to loss of supplies.
- Decision to down man was influenced by incorrect terminology. Continued use of '**Black Out**' in communications gave wrong impression to Onshore Team.



## What Went Well

- Emergency Response onboard the FPSO
- Inlecs overcoming challenges to restore power
- Coordination by Woodside Emergency Response Centre
- Processing of PAX lists and passengers
- Down manning and accommodation of personnel
- Re-mobilisation back to FPSO

**Up man completed on 8<sup>th</sup> July 2008**



## Key Learnings:

- Maersk Ngujima-Yin departed from Conversion Yard with minimal systems fully commissioned.  
**Inadequate Project Management/Planning**
- UPS 'A' failed due debris being left within cabinet.  
**Inadequate Commissioning**
- Loss of External Communications due to anomaly with C&Es  
**Inadequate Design and Operations Review**
- Onshore and Offshore Management Teams did not fully appreciate the potential consequences after failure of the 2<sup>nd</sup> UPS system. **Inadequate Risk Assessment**
- Incorrect use of terminology led to confusion over the status of power during the incident – decision to down man influenced by inaccurate terminology.  
**Inadequate Communications**