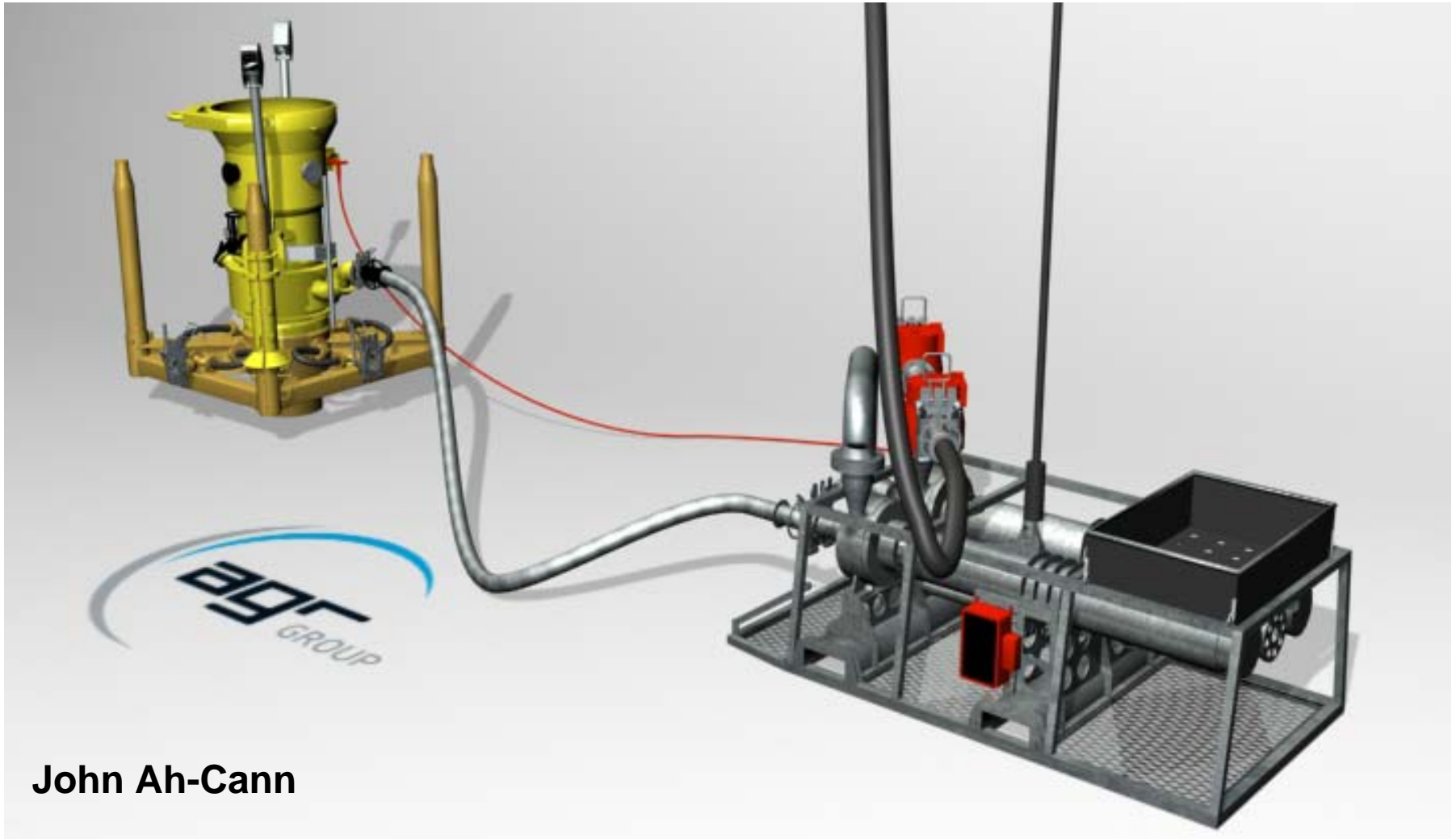




# Riserless Mud Recovery System First use on Crux-2 Well



John Ah-Cann



# Riserless Mud Recovery System Introduction:

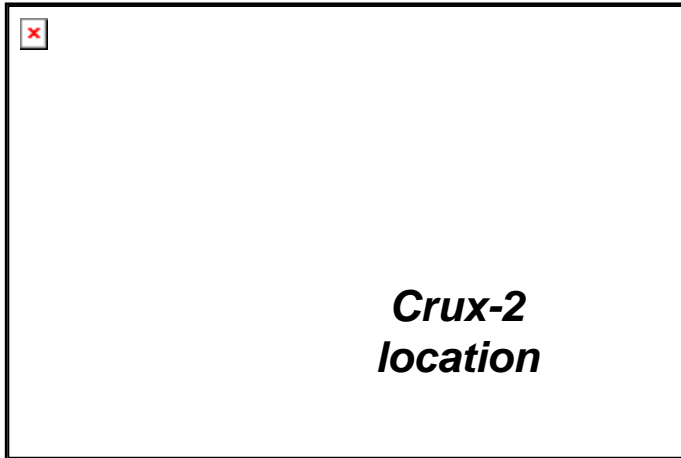
- A riserless mud recovery (RMR) system used to drill 24” surface hole on Nexus Crux-2 well to 1166m in 162m water depth.
- This is only the second application of the RMR system in Australia.
- Unlikely that the hole could have been drilled to the same depth without the RMR





# Riserless Mud Recovery System

## Crux-2 Background:



Crux-2 well being drilled in Browse Basin AC/P23 ~ 700km west of Darwin in the Timor Sea.

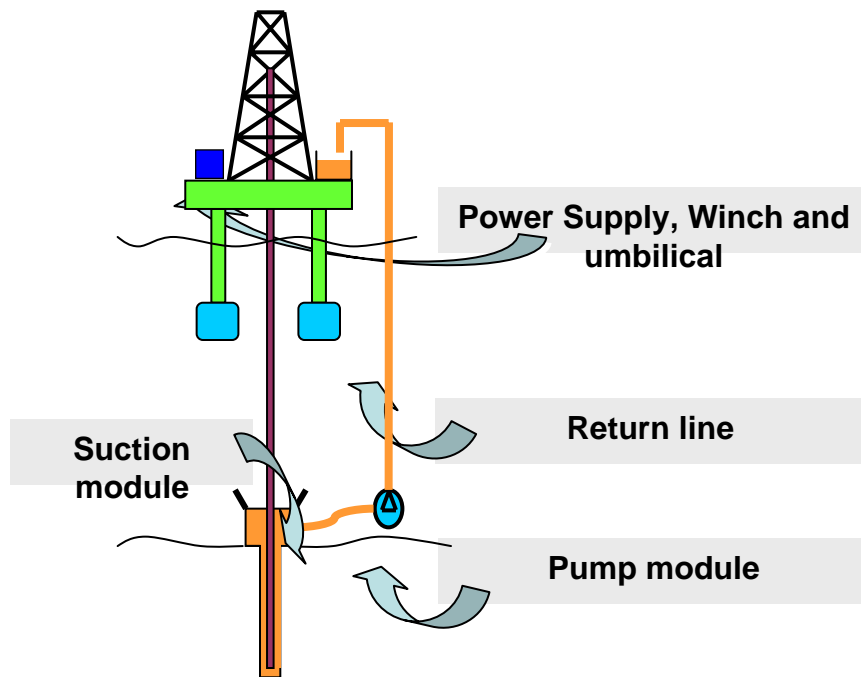
Crux-2 is second well in field; Crux-1 drilled in 2000 and tested 65.5 MMscfd and 1921 bbl/d condensate.





# Riserless Mud Recovery System

What is it? (System Description):



RMR consists of:

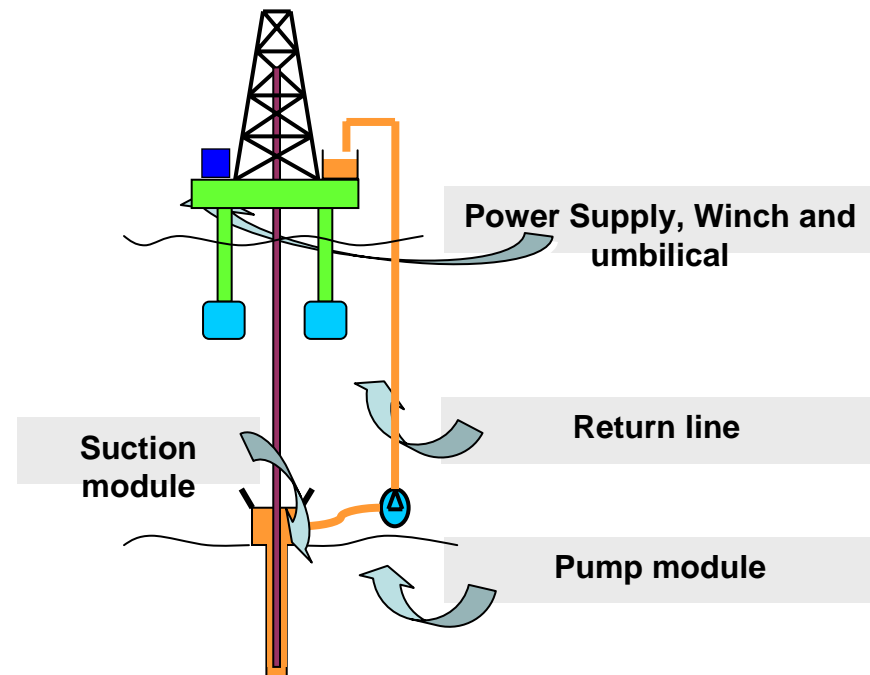
- Suction Module (SMO)
- Subsea Pump Module
- Suction Hose and jumper cable
- Mud return hose and umbilical
- Umbilical winch package
- Control unit



# Riserless Mud Recovery System

What is it? (System Description):

- Mud can be used instead of “pump & dump”
- Benefits of riserless drilling retained
- A dual hydrostatic gradient can be employed
- Better hole cleaning, well bore stability, reduced risk of lost circulation, potential to eliminate casing string, reduce risk of shallow hazards, reduced discharge to sea





# Riserless Mud Recovery System

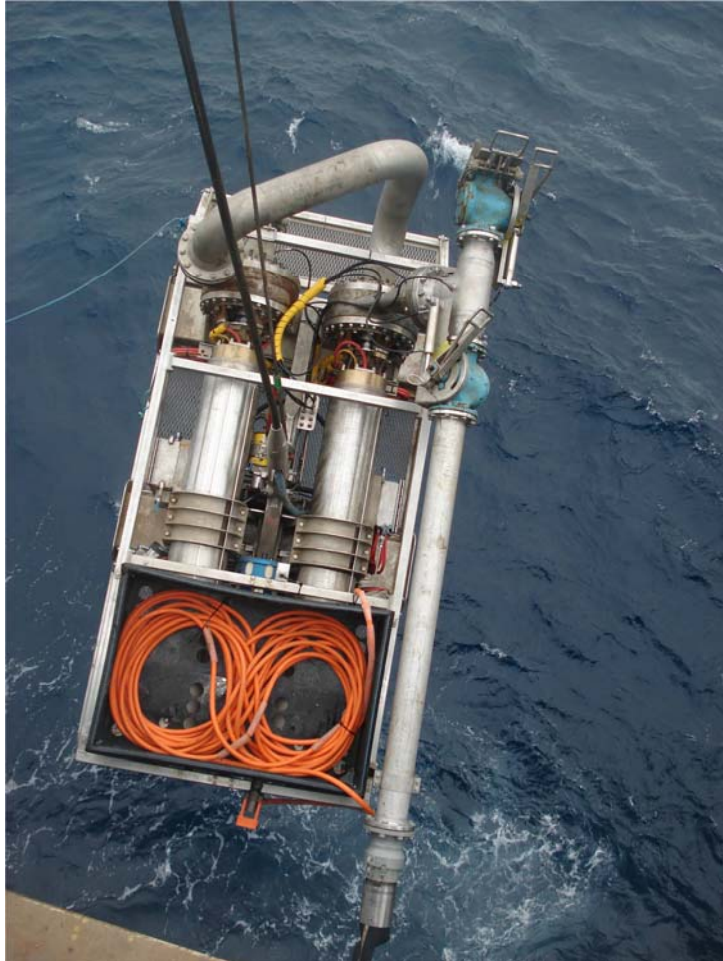
## System Description – Suction Module





# Riserless Mud Recovery System

## System Description – Subsea Pump Module





# Riserless Mud Recovery System System Description – Winch Package





# Riserless Mud Recovery System System Description - Hose



**Suction Hose between SMO and Subsea Pump**



# Riserless Mud Recovery System

Execution – how did it perform?

- Logistical and commissioning problems prevented the RMR system being available for the first half of the 24” surface hole
- Prior to commissioning the RMR system, 24” hole was drilled to 630m with seawater and viscous sweeps
- Drill string had become stuck on several occasions
- Hole was not being adequately cleaned
- Hole was being drilled using “doubles”
- Consuming a lot of mud chemicals trying to clean the hole with sweeps
- Unlikely that planned hole section of 1050m would be reached



# Riserless Mud Recovery System

Execution – how did it perform?

- Once RMR system operational, the hole was displaced to gel mud
- Initially no mud returns – had to pick up and stage displacement due to the amount of cuttings in the hole
- Once displacement complete, the hole unloaded with massive amounts of cuttings over the shakers
- Over 200m of fill was found on bottom of the hole when staging back to bottom





# Riserless Mud Recovery System

## Execution – how did it perform?

- The rest of the surface hole was drilled trouble free – no tight hole, no stuck pipe, no fill on connections
- The RMR represents a breakthrough in the way wells can be planned and drilled – not only in the Timor Sea where lost returns are prevalent, but potentially in all areas where riserless drilling is employed
- Next Crux well could reduce one casing string





# Riserless Mud Recovery System

## The Future:

- RMR is continuing to be developed:
- Over 15 wells have been drilled in the Caspian Sea with RMR
- A system has been qualified to 450m water depth in North Sea
- A JIP aims to develop a system to run in 5,000 ft water depth by end of 2007
- Further information – contact John Dale: [jda@agr.no](mailto:jda@agr.no) or [www.agr.no](http://www.agr.no)

