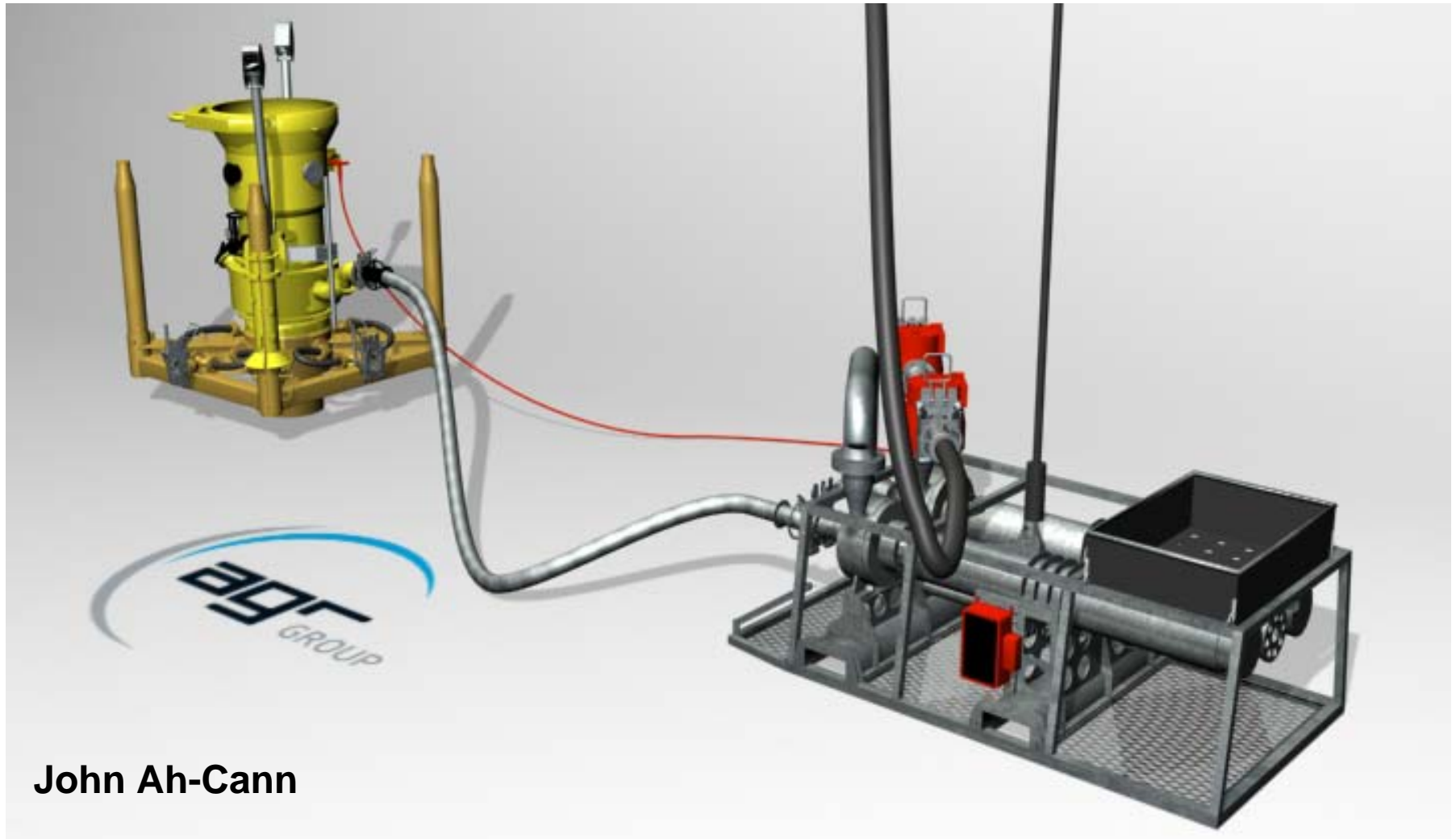




Riserless Mud Recovery System First use on Crux-2 Well



John Ah-Cann



Riserless Mud Recovery System Introduction:

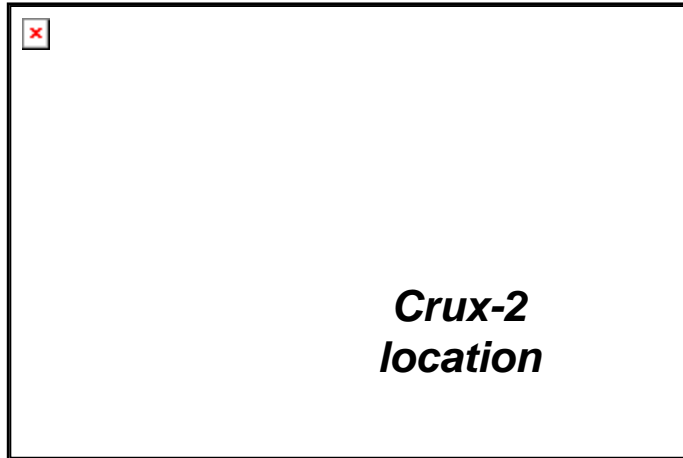
- A riserless mud recovery (RMR) system used to drill 24” surface hole on Nexus Crux-2 well to 1166m in 162m water depth.
- This is only the second application of the RMR system in Australia.
- Unlikely that the hole could have been drilled to the same depth without the RMR





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.

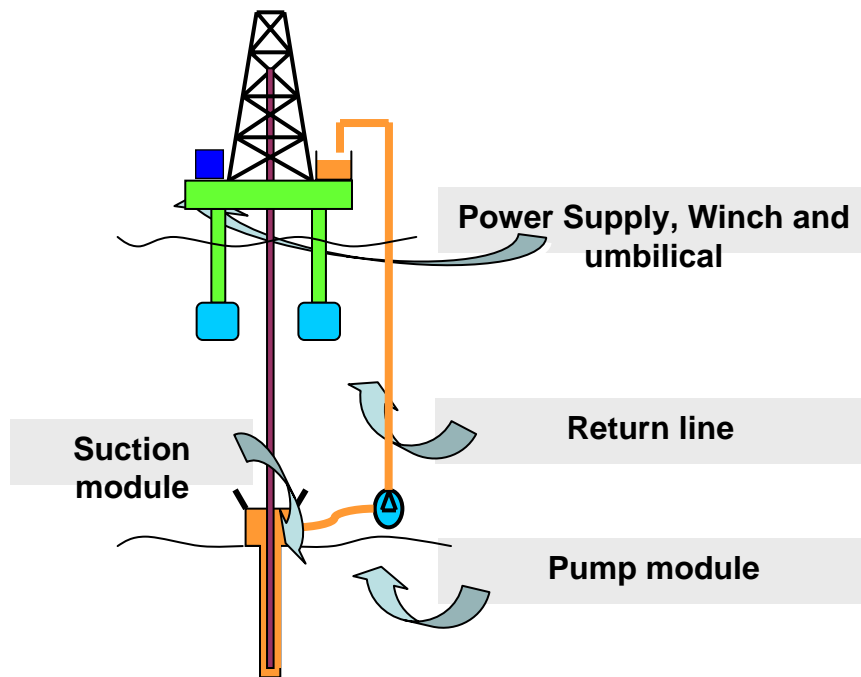
Crux-2 is second well in field; Crux-1 drilled in 2000 and tested 65.5 MMscfd and 1921 bbl/d condensate.





Riserless Mud Recovery System

What is it? (System Description):



RMR consists of:

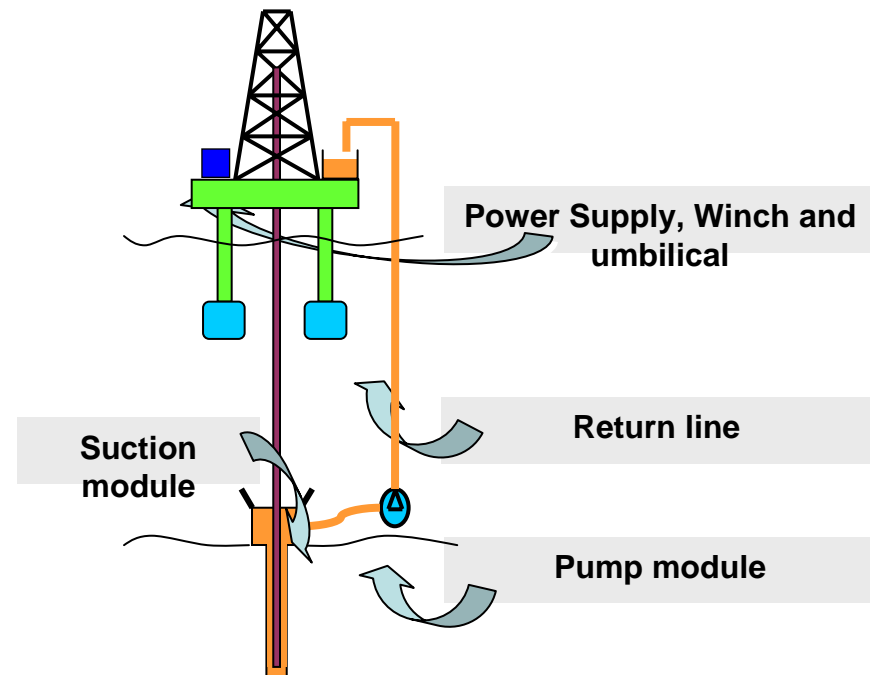
- Suction Module (SMO)
- Subsea Pump Module
- Suction Hose and jumper cable
- Mud return hose and umbilical
- Umbilical winch package
- Control unit



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

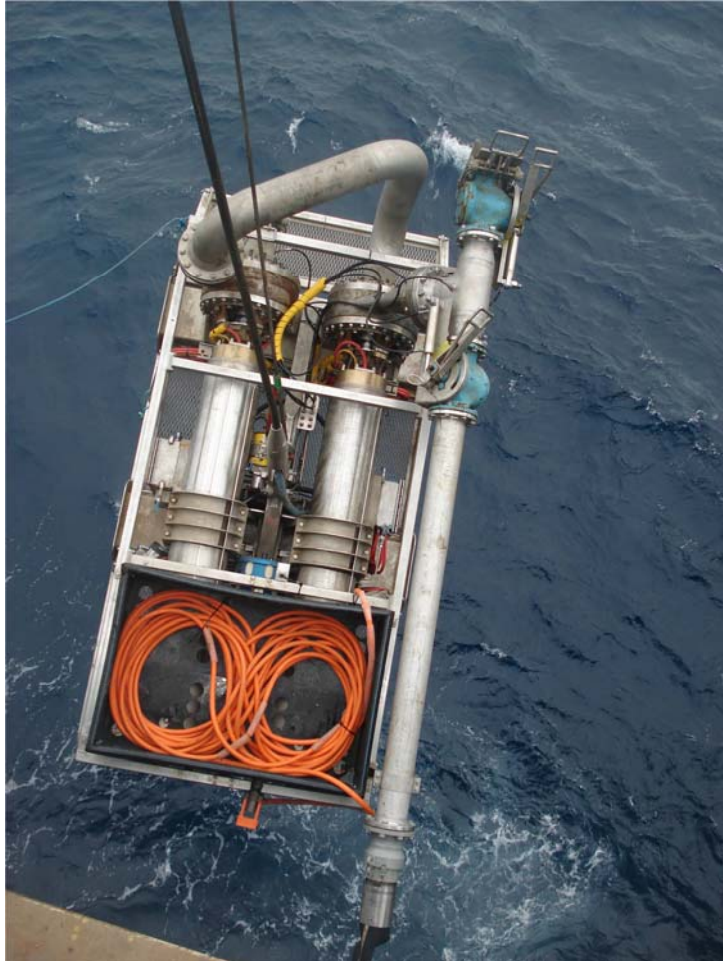
System Description – Suction Module





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 or www.agr.no

