

The background of the slide is an underwater photograph. Sunlight rays (crepuscular rays) are visible, filtering down from the surface, creating a dramatic, blue-toned scene. The water has a textured, rippled appearance.

# Catania 21-09-15

- KM3NET Marine Operations

Klaus Leismüller

## Tools – MSV Ambrosius Tide and CS A. Meucci



- Multi Service Vessel ATide
- 30 t hydraulic A-Frame with 4500m lift lines
- Heavy work class ROV rated up to 4500 mwd (125 hp)
- DP2

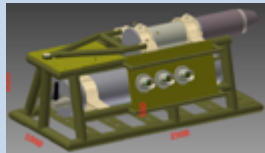


- Cable Repair Ship Antonio Meucci
- Fully equipped for cable jointing activities and cable deployment (drum and drum engine)
- ADP 701

# Equipment



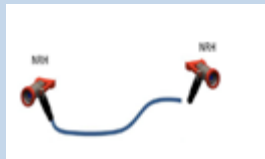
1 x New CTF (Cable Termination Frame)



1 x Old CTF



2 x Junction Box (JB 1 and JB 2)



2 x Interlink Cable dry (CTF – JB)  
7 x Interlink Cable oil (DU – JB)



Cable Tray (deployment tool)



# recent Marine Ops

- **Operation July 2015**

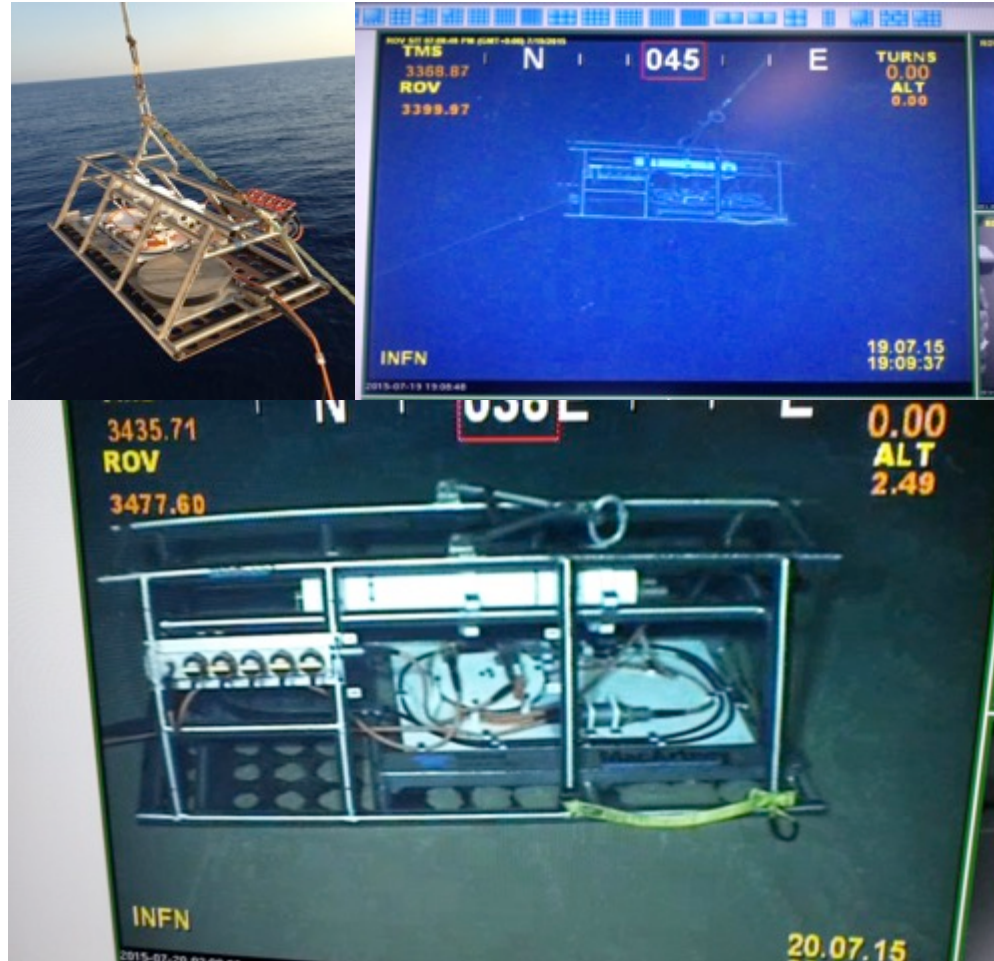
**Recovery Old CTF and deployment of New CTF**

- To prepare the operation supervisors of the AT had a crew transport to the Meucci and held a coordination meeting offshore. Communication during ops between vessels was handled through a Skype Group and a UHF radio as back up.
- The recovery of the old CTF went smooth using the AT and its ROV to guide and hook the Meucci Heavy Lift Line into the upfront purpose rigged old CTF. AT beacons were installed upfront on Meucci HLL and AT provided ROV friendly hook.
- The recovery was performed by the Meucci. Onboarding, change-out, splicing and testing happened on the Meucci
- Redeployment of the new CTF was initiated by the Meucci. As the Meucci has significant technical restrictions (type of DP, beacons not suitable for 3500m water depth, accuracy levels for cable deployment) the deployment was mainly guided by the AT. Using AT Survey and the AT ROV to maneuver the Meucci and correspondingly the new CTF to the old position. This has been achieved with an accuracy of +5 meters.

**Final step of deployment took 15 hours of constant coordination of the two vessels!**



# Pictures CTF deployment



# recent Marine Ops

- **Operation July 2015**

**Deployment of JB1, JB2 and cables, T2001-T2007 cabling**

- Before and after the CTF activities the AT performed extensive field works.
- 585m cable between CTF and JB1 and 310m cable between CTF and JB2 were deployed using a purpose designed Cable Tray (designed in Genova)
- JB1 and JB2 were deployed and connected to the new CTF
- JB preparation pre deployment and design requires some adjustment to improve future activities (see lessons learned document)
- Afterwards the remaining 7 cables to the the Tower DUs to JB1 were deployed and connectors parked in a safe position. Deployment of interlink cable T2001 to 2007 went smooth using Cable Tray. The cable tray will be upgraded to also be used as a 'basket transporter' in the future to improve field works.

# upcoming Marine Ops

- **Operation December 2015**

**Deployment T2008 (T2007?), deployment DU-2, recover PPMDU, recover T2000 and additional field works as contingency (weather)**

- Re-Deploy T2008 and first String DU with inter link cable for the string DU. T2008 cable already on the seafloor.
- Depending on availability and weather window more equipment (Towers) can be deployed
- Also recovery of the PPM DU and T2000 will be planned for, but is very unlikely. Especially the Tower has proven to be difficult to recover under suboptimal conditions
- We have rented 300 sq. warehouse space for storage and final testing of units. This can be used to store and accumulate equipment to be deployed. NB! This is basic storage space with the capacity to perform some mechanical work and basic testing. This space is not suitable to perform activities that should have been covered at the assembly site as we saw during previous operations.
- Goal in the future should be batch deployment of equipment to save money but to also improve operational performance.