RV Falkor
Technical Cruise Support
2013 - 2015
Leighton Rolley – Lead Marine Technician
Introduction

• Overview of Technology Driven Cruises 2014 – 2015
• Challenges - There are no secrets to success. It is the result of preparation, hard work, and learning from failure.
• Changes to science systems and technical support
• 3 Marine Technicians - (Veit, James and Paul)
  • Access to temporary technicians based on mission requirements
• 2 Lead Marine Technicians (Leighton, Colleen) – 2015
• Science Services Manager (Shore side) – 2015
• 24hr science support – Typically 1 LMT, 2 x MT’s
• Maximizing platform system usage with the aim to meet and exceed PI’s cruise objectives
Science Expeditions 2014/15

2014 Expeditions – 10 expeditions

FK12L010 – Andy Bowen – Hybrid tether tests
FK140218 – Adrienne Copeland – Student cruise 1
FK140307 – Chris Kelly – Multibeam Mapping
FK140418 – Student Cruise 2 – Multibeam Mapping, VMP/CTD
FK140502 – Chris Kelly – Multibeam Mapping
FK140613 – Student Cruise 3 – MOCNESS, CTD
FK140626 – Brian Glazer – AUV/CTD
FK141015 – Mike Coffin – Mapping EM302, EM710
FK141109 – Jeff Drazen – SOI 11km Landers
FK141215 – Doug Bartlett - Landers

2015 Expeditions – 6 Expeditions

FK150117 – Amy Waterhouse – Tasmin Sea CTD, ADCP
FK150301 – Malcolm McCullogh - ROV
FK150324 – Oscar Pizaro – Multiple AUV’s, ROV
FK150410 – Greg Ivey
FK150523 – Satish Singh – Seismics, Multibeam, Knudsen, Maggie
FK150728 – Kelvin Richards – CTD/ADCP

2015 Science program impacted by loss of NEREUS AUV
Since 2012 – Falkor has mapped 250,000 Sq km
Best Multibeam Platform!
Multi Component Technology Driven Cruises

Platform and portable systems
CTD
EM302
Sentry AUV

Hell’s Crater
• Initially NEREUS AUV Cruise
• SOI 11k Landers
  • Lander design verification
  • Corer/Camera – Deepest Fish
  • Box corers
• EM302 Multibeam – 10,000m
• Aberdeen Camera Trap
• Baited traps

Challenges!
• Full ocean depth operations
• Lander design and testing
• Loss of SOI Lander & Coring System
• Aberdeen Lander camera damage
RF Failure
Can Do Attitude
Falkor Seamount
8500m
FK150301 – Malcolm McCulloch

• Australia has no science ROV capable of exceeding a few hundred meters
• Comanche ROV – Commercial ROV Hire
  • Fitted with SOI supplied equipment Lasers, CTD, HD Cameras, Tooling sled
• Vessel CTD operations
• Extensive Mapping of canyon EM710/EM302
• Comprehensive Outreach program and real-time streaming
Perth Canyon
First complete survey of the canyon system

Cruise Challenges
- Commercial ROV
- Navy activity – limited window
- USBL Calibration
- Manipulator issues
Multibeam
Perth
Canyon
Perth Canyon

The Challenges
FK150324 – Oscar Pizzaro

- SAAB Falcon ROV
- Multiple AUV Operation
  - 2 x Iver AUV
  - 1 x Wave Glider
  - SIRIUS AUV
  - Slocum Glider
  - Camera Float

- Workboat operations
- Pole mounted system
- EM710 Multibeam
- Nebula

Scott Reef
Challenges
Multiple teams and Multiple Systems
FK150410 – Greg Ivey

• Represents SOI’s first truly multi-disciplinary cruise with multiple platforms and multiple systems

SAAB Falcon ROV – 50 deployments/80hrs footage
  • 15TB of cruise Data
  • Sample Basket
• EM710 Habitat Mapping
• EK60 Fisheries Sounder
• ADCP75 kHz
• ADCP150 kHz
• Workboat – Atreyu
• Workboat – Zodiac
• USBL
• CTD
• Turbo map (VMP)
• Moorings 800m/200m
• Snorkel operations/Shallow moorings
• Nebula
Challenges
Data Management
Intense 24hr Science
Proximity to reef/water depth
Currents
Nature...if it stings or bites Australia has it
Of the nearly 50 instruments, we appear to have almost 100% data return. On the ship, we have used every measurement system available, as well as deployed tools like the TurboMAP probe and the ROV

Greg Ivey
Evolving the platform to deliver world class science for current and emerging technologies

Streamlining core science systems
Heli Deck Removal

• 4 x 20ft containers
• Freshwater
• Seawater
• Network connectivity
Science Systems Upgrades
2013 - 2015
Starboard Deployment
Vessel motion monitor
.322 Wire replacement
Science Systems Upgrades
2013 - 2015

Acoustics & Nav
• Release Transducers
• WHOI Transducers
• Over-the-side pole
• POSMV Installation – IMU & GPS
• Mast modifications
  • New systems
  • Ease of access
• Gondola Cameras
• Hydrophone
• USBL Beacons
Science Systems Upgrades 2013 - 2015

• Main mast modifications
• Magnetometer
• Movement of laser alignment
• PAR Sensors
• Nebula
• Blimp Aerial Platform
• Met Mast fabrication
  • Dual Gill Met Pack
• Upgraded Matrix System - 64
2014/15
Biggest Challenge
SAAB Falcon
300m Rated Vehicle
HD Camera
Hydrolek Manip