RV *Investigator* Trial Voyage Plan

Voyage:	IN2015_E04
Equipment Champion:	Andrew Bowie
Voyage title:	Trial voyage - trace metals and micronutrients
Start port:	Hobart
Finish port:	Hobart
Version:	V11.0 - 22 April 2015

VOYAGE MANAGER	
Name	Max McGuire
Title	MNF Operations Officer
Email	Max.mcguire@csiro.au

EQUIPMENT CHAMPION	
Name and title	Andrew Bowie, Equipment Champion
Affiliation	UTAS
Contact details	Andrew.bowie@utas.edu.au

ITINERARY	
Mobilisation:	Hobart, Friday, 24 April 2015
Depart:	Hobart, 1800 Saturday, 25 April 2015
Return:	Hobart, 1800 Tuesday, 28 April 2015
Demobilisation:	Hobart, Wednesday, 29 April 2015

Voyage objectives

Marine National Facility:

- Introduce key stakeholders and science teams to Investigator, MNF and ASP operations
- Undertaking as many operations and processes using as much of Investigator's equipment, facilities and capabilities as possible to train and familiarise MNF staff and visiting science teams
- Develop and implement procedures and JHAs for scientific operations
- Identify any problems, issues and conflicts and include these in a voyage report
- Collect and process data and samples as for a research voyage to test laboratories, facilities and on board systems
- Undertake opportunistic testing and checks as per outstanding SFR list.

Equipment champion (Andrew Bowie – science party):

Port period

- MNF TMR and clean containers to be brought up to spec
- Trial procedures for launch and recovery of McLane pumps and TMR

Samples to be collected

- Trace elements in dissolved seawater samples and suspended particles from:
- trace metal clean underway seawater supply (approximately every 2 hours if system is shown to be non-contaminating)
- trace metal rosettes (TMR), 1-2 casts of each rosette (new MNF rosette and ANU rosette) per station. MNF rosette will need to be thoroughly cleaned at sea and shown to be non-contaminating
- McLane in situ pumps (ISPs), 1 or more cast of multiple pumps per station (6 MNF pumps and 2 ACE CRC)
- Hydrography and nutrient data will be collected by MNF hydrochemistry team
- A trace metal clean aerosol filtration system will be tested in the aerosols lab

Underwater Glider Retrieval Trial

Underwater gliders are often deployed from and retrieved by ocean going Research Vessels.

A three sided net frame and a dummy Underwater Glider have been constructed by CSIRO O & A for the purpose of trialling the RV Investigator and its deck equipment in these operations.

The location and timing of these trials is of no concern but reasonably good weather is required and the ship's FRC to be on standby.

A possible secondary activity for O & A's glider project is to carry out an actual deployment and retrieval of an actual glider on the continental shelf to collect some data. This would be dependent on a glider being available, ships time being available and weather conditions when the ship is closest to the Tasmanian coast.

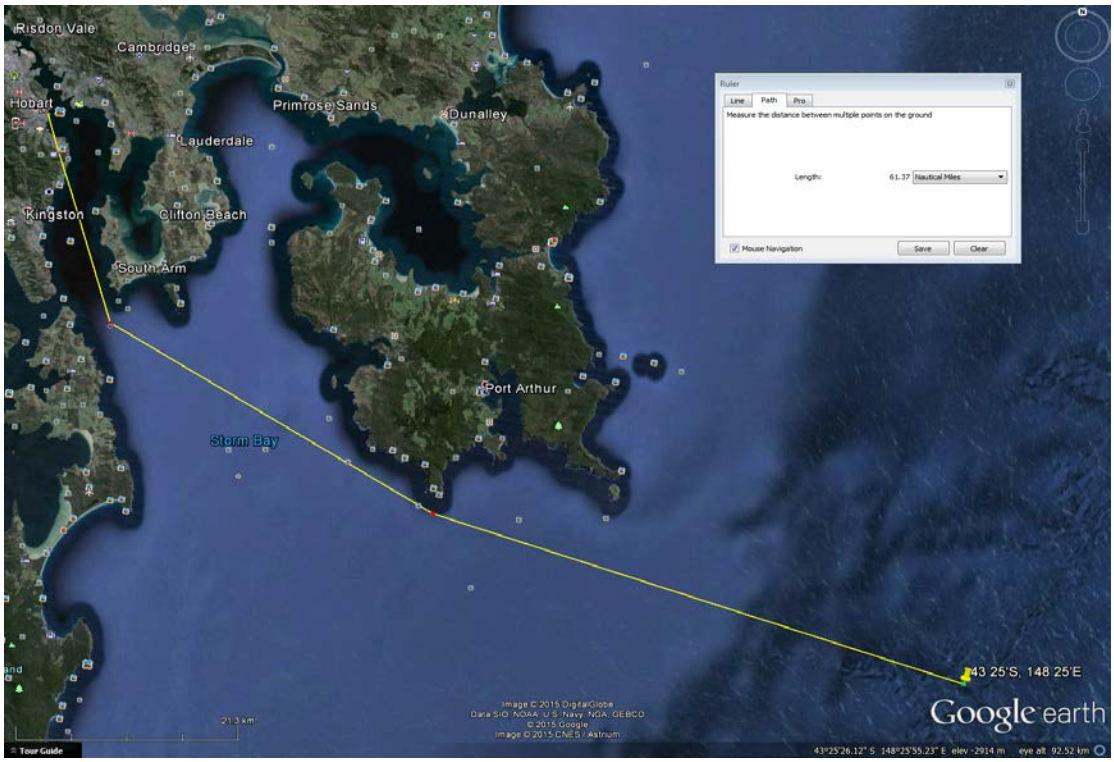
Operational Risk Management

No potentially high risk work has been identified outside standard operations.

Overall activity plan including details for first 24 hours of voyage

1. Start underway supply in open waters; check for contamination using shipboard systems
2. Test TMR deployment
3. Clean 15 x 10 L Niskin-X bottles for TMR (on deck)
4. Re-deploy TMR with cleaned Niskins
5. Check for contamination using shipboard systems
6. Test 1 x ISP deployment
7. Deploy all ISPs

Voyage track example



Waypoints and stations

Two stations of approximately 24 hours duration are planned.

	Latitude	Longitude	Water Depth (m)
Station 1	43° 25'S	148° 25'E	2914

Time Estimates

A brief description or tabulation of how you intend to use your ship time, based on a steaming speed of 12 knots.

	Distance (NM)	Time (hr)
Hobart to station 1	61.4	5.1
station 1 to Hobart	61.4	5.1

Investigator equipment (MNF)

- Trace metal clean container vans (two vans, one for sample processing and the other for analyses; i.e., new clean container and former CSIRO clean container now transferred to MNF)
- Trace metal clean underway seawater supply
- Trace metal rosette, including storage container for TMR (the TMR needs a plastic cover fabricated).
- Specialised wires (Dynex rope, CTD wires), blocks, gantries and winches for deployment of the above equipment, as defined in the procurement process
- McLane in situ pumps (ISPs) x6

- Nutrient analysis
- Special block for the underside of the coring boom for deployment of TM rosette and McLane pumps.

User Equipment

- ANU trace metal rosette and wooden storage crate
- ACE CRC McLane in situ pumps (x2)
- Flow injection analysers for trace elements and associated consumables/chemicals (ACE CRC)
- Trace metal clean sample processing equipment (filters, capsules, transfer lines, connectors, sample bottles, etc) (ACE CRC)
- Analysis at home laboratory of samples for dissolved trace metals using SeaFast multi-element system with ICPMS analysis (ACE CRC)
- ANU equipment and consumables (filters, capsules, sample bottles)
- ANU trace metal analysis will be undertaken ashore using a custom build metal pre-concentration system
- A trace metal clean aerosol filtration system (CSIRO/Curtin) to be installed in the aerosols lab
-

Special Requests

TMR and ISP equipment require 240 V power pre-/post- deployment in a sheltered space
Containers require power and services

Shore-based testing of TMR and ISPs is underway with Danny Holdsworth

Permits

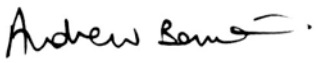
None required.

Personnel List

1.	Max McGuire	Voyage Manager	CSIRO MNF
2.	Don McKenzie	Operations Manager	CSIRO MNF
3.	Anoosh Sarraf	DAP Support	CSIRO MNF
4.	Pamela Brodie	DAP Support	CSIRO MNF
5.	Aaron Tyndall	SIT Support	CSIRO MNF
6.	Mark Lewis	SIT Support	CSIRO MNF
7.	Stephen Thomas	SIT Support	CSIRO MNF
8.	Bernadette Heaney	GSM Support	CSIRO MNF
9.	Dave Watts	GSM Support	CSIRO MNF
10.	Tara Martin	GSM Support	CSIRO MNF
11.	Andrew Bowie	Equipment Champion	UTAS-IMAS/ACE CRC
12.	Pier van der Merwe	TMR	ACE CRC
13.	Kathrin Wuttig	Underway sampling and analysis	ACE CRC
14.	Zanna Chase	TMR	UTAS-IMAS
15.	Tom Holmes	Underway sampling and analysis	UTAS-IMAS
16.	Holly Winton	Aerosols	Curtin University
17.	Philip Boyd	Incubations - water (TMR)	UTAS-IMAS
18.	Matthieu Bressac	Incubations – particles (ISPs)	UTAS-IMAS
19.	Michael Ellwood	ISPs	ANU
20.	Moneesha Samanta	ISPs	ANU
21.	Lindsay Macdonald	Glider Support	CSIRO
22.	Hugh Barker	Glider Support	CSIRO
23.	Morgane Perron	TMR filtrations; aerosols support	UTAS-IMAS

Please note: The MNF support staff numbers in this table are a guide and will vary depending on the activities being undertaken on the trial voyage. It may include Hydrochemists in addition to the other groups.

Signature

Your name	Andrew Bowie
Title	Equipment Champion
Signature	
Date:	21 April 2015

List of additional figures and documents

None.