

## **Curriculum Vitae - Andrew Birkett**

### **Personal details**

Full Name: Andrew John Birkett

Date of birth: 24/12/1983

Nationality: South African

Home language: English

Other languages: Afrikaans

### **Education**

#### **Tertiary education**

2010: MSc in Applied Marine and Earth Systems Science (Oceanography) at the University of Cape Town.

2006: BSc (Honours) in Physical Oceanography at the University of Cape Town, with distinction.

2005: BSc in Ocean & Atmospheric Science and Environmental & Geographical Science at the University of Cape Town.

#### **Schooling**

2001: Completed the senior certificate (Grade 12), with distinction, at the South African College High School (SACS).

## **Relevant Experience**

01/05/2011 to present: Employed full-time by Marine Data Consultants (MDC) as a hydrographic surveyor and data processor:

Project History at MDC:

- 22/06/2015 to 26/06/2015: Attended EIVA Online training course in Aberdeen. Course covered the use of NaviPac, NaviScan, NaviEdit and NaviModel for online data acquisition and navigation control, as well as MBES calibration processing.
- 25/05/2015 to 10/06/2015: MMT/Reach Subsea Red Penguin Atlantic Superconnector cable route survey onboard the MV Stril Explorer between Iceland and the UK. Data processor onboard responsible for processing of hull-mounted and ROV-mounted multibeam bathymetry data using EIVA NaviEdit and NaviModel. Navigation was post-processed using Applanix POSPac MMS and Ixsea DELPH.
- 13/05/2015 to 24/05/2015: MMT/Reach Subsea Trials of the Surveyor Interceptor High Speed ROV onboard the MV Stril Explorer between the UK and Norway. Senior surveyor responsible for installation and calibration of all survey equipment including Kongsberg 2040D Dual TX/RX MBES, EdgeTech 4200 SS, EdgeTech Chirp, Kongsberg HiPap USBL, Sonardyne Ranger iUSBL with Lodestar, Sonardyne SPRINT, Ixsea ROVINS, Applanix POS MV, CNav 3050 GNSS. All data acquisition and navigation was performed in EIVA NaviPac and NaviScan.
- 26/03/2015 to 29/03/2015: WEPEX Shallow Water Multibeam survey onboard MDC Vessel MaDCat north of Doringbaai on the South African

west coast. Senior surveyor responsible for mobilisation, calibration and operation of survey equipment including CNav 3050 GNSS receiver, Applanix POS MV 320, and Reson Seabat 7125 multibeam echosounder. Acquisition and integrated navigation performed with the use of QPS QINSy. Also responsible for processing of bathymetry data using QPS Fledermaus and QPS Qloud data processing and visualisation software.

- 12/01/2015 to 25/02/2015: De Beers Marine South Africa AUV PPD campaign onboard the M/V DP Star off the southern Namibian coast. Involved in installation and calibration of the Sonardyne 6G USBL system, CNAV GNSS system and Ixsea Octans MRU. Responsible for online survey duties as well as dive planning using the Maridan MOI software, and post-processing and QC of the SLBL positioning data. Also responsible for deployment, calibration and operation of the Sonardyne 6G USBL system using Compatt 6, Wideband Mini Transponders (WMTs) and AvTrack6 acoustic modems.
- 25/11/2014 to 10/12/2014: MMT service and maintenance onboard the M/V Stril Explorer in Esbjerg, Denmark. Responsible onboard for routine maintenance and servicing of survey equipment onboard.
- 18/08/2014 to 18/09/2014 & 30/09/2014 to 29/10/2014: MMT/Nexans cable route survey between Italy and Montenegro in the Adriatic Sea onboard the MMT vessel M/V Franklin. Senior surveyor onboard responsible for online survey duties including acoustic positioning of the Sub-Atlantic Comanche ROV using Ixsea GAPS USBL system, acquisition of ROV-mounted dual-head R2Sonic 2024 multibeam bathymetry data, EdgeTech 4200 sidescan, EdgeTech Chirp, Ixsea Phins, IXBlue BlueView, Gradiometer, as well as hull-mounted Kongsberg EM710 multibeam bathymetry. Also responsible

for installation and operation of geotechnical survey equipment including vibrocorer, Neptune 5000 CPT and box-corer. Online software used included: QPS QINSy, EdgeTech Discover/ETSI, Applanix POSView, C-Nav C-Setup, Ixsea GAPS MMI, IXBlue ProViewer, Visualworks VisualDVR.

- 06/08/2014 to 15/08/2014: MDC/Alma Marine Trust high resolution multibeam survey of shallow water mining concessions along the southern Namibian coast between Luderitz and Oranjemund onboard the Alma Marine Trust vessel M/V Rebecca. Senior surveyor onboard responsible for mobilisation, calibration and operation of survey equipment including Applanix POS MV 320, Reson Seabat 7125 multibeam echosounder, and C-Nav 3050 GNSS Receiver. Acquisition and integrated navigation performed with the use of QPS QINSy. Also responsible for processing of bathymetry data using QPS Fledermaus and QPS QCloud data processing and visualisation software.
- 07/07/2014 to 11/07/2014: MDC/CSIR high resolution multibeam survey of Duncan Dock in the Port of Cape Town onboard the MDC survey vessel MaDCat. Senior surveyor responsible for mobilisation, calibration and operation of survey equipment including Applanix POS MV 320, Reson Seabat 7125 multibeam echosounder, Leica RTK GNSS base and rover. Acquisition and integrated navigation performed with the use of QPS QINSy. Also responsible for processing of bathymetry data using QPS Fledermaus and QPS QCloud data processing and visualisation software.
- 03/05/2014 to 14/05/2014: MMT/Statnett cable route survey onboard the M/V Stril Explorer in the North Sea between Norway and Denmark. Responsible onboard for mobilisation and calibration of

survey systems, as well as online survey duties including acoustic positioning of the Kystdesign Supporter ROV using Kongsberg HiPAP 500 USBL system, acquisition of ROV-mounted dual-head R2Sonic 2024 multibeam bathymetry data, EdgeTech 4200 sidescan, TSS440 and TSS350 Cable Trackers as well as Orion DoBStar Cable tracker. Online software used: QPS QINSy, EdgeTech Discover, Applanix POSView, C-Nav C-Setup, Fugro StarPack, Visualworks VisualSoft.

- 27/04/2014 to 02/05/2014: MMT/EXXON Mobil support project onboard the M/V Stril Explorer in the Balder Oil Field off the coast of Norway in the North Sea. Responsible onboard for acoustic positioning of Supporter ROV and subsea assets (SAMs and Transponder baskets) as well as co-ordinating placement and installation of subsea assets within the field.
- 15/04/2014 to 26/04/2014: MMT/HSSE dive support project onboard the M/V Stril Explorer off the coast of the Netherlands in the North Sea. Responsible onboard for acoustic positioning of divers and assets during subsea engineering operations using Kongsberg HiPAP 500 USBL system.
- 17/03/2014 to 02/04/2014: MMT/EMAS cable route survey between Troll A Platform and Norwegian coast in the North Sea onboard the M/V Stril Explorer. Responsible onboard for online survey duties including acoustic positioning of the Kystdesign Supporter ROV using Kongsberg HiPAP 500 USBL system, acquisition of ROV-mounted dual-head R2Sonic 2024 multibeam bathymetry data, EdgeTech 4200 sidescan. Online software used: QPS QINSy, EdgeTech Discover, Applanix POSView, C-Nav C-Setup, Fugro StarPack, Visualworks VisualSoft.

- 19/02/2014 to 04/03/2014: MMT/TenneT UXO investigation on the proposed cable route for the HelWin2 offshore wind farm project onboard the VOS vessel M/V Satisfaction in the North Sea. Responsible onboard for online survey duties including positioning of the Supporter ROV using a Ixsea GAPS 2 USBL system, acquiring ROV-mounted gradiometer data, acquiring scanning profiles of dredge holes using a ROV-mounted TriTech profiler and acquiring multibeam bathymetry data using a vessel-mounted R2Sonic 2024 multibeam echosounder.
- 20/01/2014 to 24/01/2014: Sidescan Sonar installation and survey for marine diamond mining company Rapid Mining onboard the vessel Ocean Heritage in Alexander Bay, South Africa. Responsibilities included installing the EdgeTech 4125 Sidescan Sonar on the vessel, acquiring data using the EdgeTech Discover and Chesapeake Technologies SonarWiz5 software as well as post-processing of data using SonarWiz5. In addition, training was provided to crew on Ocean Heritage regarding operation of the EdgeTech 4125 as well as data post-processing using SonarWiz5.
- 16/10/2013 to 13/11/2013: Office-based data processing in MMT AB offices in Gothenburg, Sweden on the REE-RTE cable route pre-lay survey data of the Capbreton Canyon in the Bay of Biscay. Processing involved QC/QA of multibeam echosounder bathymetry data acquired using a ROV-mounted R2Sonic 2024 dual head multibeam echosounder in EIVA NaviModel as well as generation of products including accepted soundings, gridnodes and depth contours.

- 10/10/2013 to 15/10/2013: DCD Dorbyl pre-dredge bathymetric survey of A-Berth in the port of Cape Town onboard the Cape Diving vessel The Beast. Responsible for installation and calibration of survey systems onboard including Reson 8125 Multibeam echosounder, Applanix POS-MV 320 GNSS navigation and attitude sensor system and Trimble 5700 RTK Base and Rover. Also responsible for online data acquisition using QPS QINSy 8.1.
- 19/09/2013 to 02/10/2013: MMT/REE-RTE cable route pre-lay survey of the Capbreton Canyon in the Bay of Biscay onboard the MMT vessel M/V Franklin. Responsible for processing of multibeam bathymetry data acquired using a vessel-mounted Kongsberg EM710 multibeam echosounder and ROV-mounted R2Sonic 2024 dual head multibeam echosounder. Processing involved sound velocity and tidal corrections in CARIS HIPS and SIPS (EM710 data) and QPS QINSy Processing Manager (R2Sonic data) as well as cleaning of multibeam data in IVS-3D/QPS Fledermaus. Post-processing of Applanix POS-MV navigation and GNSS tide data was performed using Applanix POSPac. EIVA NaviModel was used for generation of bathymetry products including accepted soundings, gridnodes and contours.
- 14/08/2013 to 10/09/2013: MMT/Nexans cable route pre-lay survey onboard the MMT vessel M/V Icebeam in the Mediterranean Sea between Malta and Sicily. Responsible for processing of multibeam bathymetry data acquired using a vessel-mounted Kongsberg EM2040 multibeam echosounder. Processing involved sound velocity and tidal corrections in CARIS HIPS and SIPS as well as cleaning of multibeam data in IVS-3D/QPS Fledermaus. Post-processing of Applanix POS-MV navigation and GNSS tide data was performed using Applanix POSPac. EIVA NaviModel was used for generation of ba-

thymetry products including accepted soundings, gridnodes and contours. Also involved in office-based product generation and reporting for the project.

- 12/06/2013 to 26/06/2013: Office-based data processing in MMT AB offices in Gothenburg, Sweden on the Statnett UK Additional cable route pre-lay survey. Responsible for processing of multibeam bathymetry data acquired using a vessel-mounted Kongsberg EM3002D multibeam echosounder. Processing involved sound velocity and tidal corrections in CARIS HIPS and SIPS as well as cleaning of multibeam data in IVS-3D/QPS Fledermaus, and the integration of the new dataset in EIVA NaviModel with one previously acquired. In addition was involved in the reporting on the bathymetry portion of the survey as well as generation of preliminary deliverable products.
- 29/05/2013 to 11/06/2013: MMT/Perenco Pipeline Inspection onboard the MMT vessel M/V Franklin in the North Sea off the coast of East Anglia. Responsible onboard for QC/QA and processing of multibeam bathymetry data acquired using vessel-mounted Kongsberg EM710 and EM3002D multibeam echosounders. Involved in processing of multibeam bathymetric data using CARIS HIPS and SIPS and EIVA NaviModel. Processing involved editing of multibeam bathymetry soundings, sound velocity correction where required, post-processing of navigation and GNSS tide data using Applanix POSPac. In addition identification and examination of pipeline exposures and free-spans was performed, with critical areas being digitized and listings created in EIVA NaviModel.
- 10/04/2013 to 21/04/2013: MMT/DONG Energy Annual Pipeline Re-survey onboard the MMT vessel M/V Franklin in the North Sea off Esbjerg on the west coast of Denmark. Responsible onboard for QC/QA



and processing of multibeam bathymetry data acquired using a vessel-mounted Kongsberg EM2040 multibeam echosounder and a ROV-mounted R2Sonic 2024 multibeam echosounder. Involved in processing of multibeam bathymetric data using CARIS HIPS and SIPS, QPS QINSy and EIVA NaviModel. Processing involved editing of multibeam bathymetry soundings, sound velocity correction where required, post-processing of navigation and GNSS tide data using Applanix POSPac. In addition identification and examination of pipeline exposures and free-spans was performed as well as generation of 5-point listings for the length of the pipelines being surveyed.

- 02/03/2013 to 08/03/2013: Cape Diving bathymetric and backscatter survey onboard the Namport Surveyor ski boat in Walvis Bay, Namibia. Involved in the installation and calibration of a RESON 7125 multibeam echosounder, Applanix POS-MV V4 integrated motion and navigation sensor and CNAV 3050 GNSS antenna and receiver. Responsible for online data acquisition using QPS QINSy 8.1 as well as associated online survey duties. Also involved in the production of survey reports to the client.
- 21/01/2013 to 26/02/2013: De Beers Marine South Africa AUV PPD campaign onboard the M/V Smit Madura off the southern Namibian coast. Involved in installation and calibration of the Sonardyne 6G USBL system, CNAV GNSS system and Ixsea Octans MRU, as well as vessel-mounted R2Sonic 2024 multibeam echosounder. Responsible for all dive planning using the Maridan MOI software, as well as post-processing and QC of the SLBL positioning data. Also responsible for deployment, calibration and operation of the Sonardyne 6G USBL system using Compatt 6, Wideband Mini Transponders (WMTs) and AvTrack6 acoustic modems. In addition, responsible for acquisition of multibeam bathymetry data using QPS QINSy 8.0 and all associated survey duties.

- 12/01/2013 to 16/01/2013: High-resolution shallow-water multibeam bathymetry survey for Ocean Stone Mining Company onboard the Ocean Stone vessel M/V Crazy Diamond on the north-west coast of South Africa. Involved in the installation and calibration of a RESON 7125 multibeam echosounder, Applanix POS-MV V4 integrated motion and navigation sensor and a CNAV 2050 GNSS antenna and receiver. Also responsible for online multibeam data acquisition using QPS QINSy 8.1 and all associated survey duties.
- 02/12/2012 to 20/12/2012: MMT cable route survey for French cable producer Nexans onboard the MMT vessel M/V Franklin between Majorca and Ibiza off the Spanish Mediterranean coast. Responsible onboard for QC/QA and processing of multibeam bathymetry data acquired using a vessel-mounted Kongsberg EM2040 multibeam echosounder and a ROV-mounted R2Sonic 2024 multibeam echosounder. Involved in processing of multibeam bathymetric data using CARIS HIPS and SIPS, QPS QINSy, EIVA NaviModel, and IVS-3D Fledermaus.
- 31/10/2012 to 23/11/2012: MMT cable route survey for Norwegian Company BKK onboard the MMT vessel M/V Icebeam in Fensfjorden, Lurefjorden and Hjeltefjorden north of Bergen in Norway. Responsible onboard for QC/QA and processing of multibeam bathymetry data acquired using a vessel-mounted Kongsberg EM2040 multibeam echosounder and a ROV-mounted R2Sonic 2024 multibeam echosounder. Involved in processing of multibeam bathymetric data using CARIS HIPS and SIPS, QPS QINSy, EIVA NaviModel, and IVS-3D Fledermaus. Also responsible for post-processing Applanix POS-MV navigation data and computing GPS Tides using the Applanix POSpac post-processing software.

- 19/09/2012 to 17/10/2012: MMT bathymetric survey for the Swedish Maritime Authority (SMA) onboard the MMT vessel M/V Icebeam in the Gulf of Bothnia. Responsible onboard for QC/QA and processing of multibeam bathymetry data acquired using a vessel-mounted Kongsberg EM2040. Involved in processing of bathymetric data using CARIS HIPS and SIPS, QPS QINSy and IVS-3D Fledermaus, and responsible for mosaicing backscatter data in Fledermaus Geocoder Toolbox. Also responsible for post-processing Applanix POS-MV navigation data using the Applanix POSpac post-processing software. QPS QINSy Processing manager was used to vertically correct soundings using predicted tide values for a tidal station nearby.
- 31/05/2012 to 05/07/2012: De Beers Marine South Africa AUV PPD campaign onboard the M/V Smit Madura off the southern Namibian coast. Involved in installation and calibration of the Sonardyne USBL system, C-Nav GNSS system and Ixsea Octans MRU. Responsible for all dive planning using the Maridan MOI software, as well as post-processing and QC of the SLBL positioning data. Also responsible for deployment, calibration and operation of the Sonardyne USBL system using both Compatt 5 and Wideband Sub-Mini transponders.
- 10/04/2012 to 09/05/2012: De Beers Marine South Africa PEP geophysics campaign off the southern Namibian coast. Involved in the mobilization and calibration of RESON 7101, Sonardyne USBL system, and Applanix POS MV V4. Responsible for all aspects of installation including mounting, offset measurement, interfacing and QPS QINSy database setup. Also involved in installation of towed arrays including EdgeTech Towfish equipped with Chirp and Sidescan, Airgun and hydrophone array, Marine Magnetism Magnetometer and Klein 3000 Sidescan towfish. Responsible for online data acquisition using all of the abovementioned systems.

- 27/02/2012 to 02/03/2012: Processing of multibeam bathymetric data from the Namdeb Explorer sampling visualization project. Pre- and post-hole scan multibeam data were processed and visualized using QPS Qloud and IVS-3D Fledermaus.
- 31/01/12 to 03/02/2012: Completed IVS-3D Fledermaus Software training course. This included data processing and visualization using DMagic, Fledermaus, Route Planner, Vessel Manager, FM Geocoder and FM Midwater.
- 07/12/2011 to 09/01/2012: Involved with the Titan Salvage/ADUS search for the wrecked bulk carrier MS Oliva off Nightingale Island near Tristan da Cunha in the South Atlantic Ocean. Activities included the installation of a Reson 7125 Dual Frequency Multibeam Echosounder on the main vessel (tug M/V Fairmount Fuji) as well as a Reson 8125 Multibeam Echosounder on the 8.5m Rhino launch. Both systems included the installation of an Applanix PosMV V4 integrated motion and navigation system. Also involved with the installation of the RTK GPS Base Station on Nightingale Island, as well as the online survey activities (using QPS QINSy as the acquisition software) on both the main vessel and the survey launch and the QC/QA, processing and visualization of the multibeam data (using IVS-3D Fledermaus).
- 31/10/2011 to 05/11/2011: Attended the 57th UNB Multibeam Echosounder Training Course in Fremantle, Western Australia.
- 16/07/2011 to 19/08/2011 and 14/09/2011 to 16/10/2011: Involved with a geophysics/exploration campaign on board the M/V DP Star off the west coast of Namibia in the capacity of client representatives for NamDeb. Activities involved QC/QA of geophysical SEG-y data (Sparker and TOPAS), as well processing, interpretation (using

GeoResources Geosuite) and visualization of this data (using IVS-3D Fledermaus).

- 02/06/2011 to 05/07/2011: Involved with the 3D USBL positioning of drilling systems on board the De Beers Marine Namibia mining vessels. Activities include, but are not limited to, maintenance and operation of the USBL system (hardware and software), as well as the surface positioning systems and data acquisition software.

01/06/2010 to 30/04/2011: Consultant to the University of Miami and the National Oceanographic and Atmospheric Administration (NOAA). Solely responsible on board for the deployment and maintenance of instruments, and the collection of oceanographic data during trans-Atlantic cruises on ships of opportunity. Coordinator of activities in Cape Town related to this project.

21/04/2010 to 06/05/2010: Field consultant to Anchor Environmental Services. Responsible for the collection and formatting of water quality data as part of a continued monitoring programme in Sedgefield and Plettenberg Bay. Also responsible for training individuals to continue monitoring on an ongoing basis.

01/12/2009 to 31/01/2010: Student vacation work for the Council for Scientific and Industrial Research (CSIR). Work involved analysis of wave data in collaboration with coastal engineers from the Department of the Built Environment at the CSIR.

## **Other Skills**

I am proficient with all Microsoft Office programs and have made fairly extensive use of Matlab throughout my academic career. I am proficient in the use of QPS QINSy survey data acquisition and post-processing software, QPS Fledermaus data processing and 3D visualization software, CARIS HIPS and SIPS hydrographic data processing software, EIVA NaviModel hydrographic data and pipeline processing software, Chesapeake SonarWiz5 sidescan and geophysical data acquisition and processing software, EdgeTech Discover sidescan acquisition software, GeoResources Geosuite geophysical data processing, interpretation and visualization software.

My academic career has provided me with skills relating to research and reporting, as well as an appreciation for proper scientific practices and ethics. I feel, however that my greatest asset in terms of personal skills is my ability to solve problems and complete tasks efficiently, while maintaining high personal standards with regards quality and integrity of work.

## **Research Interests**

Research undertaken during my academic career has involved air-sea interactions, focusing on the physical effects of the atmosphere on ocean surface gravity waves. My scientific interests include atmospheric variability on various time-scales as well as the relationship between climate variability and the upper ocean.

Since entering the world of hydrographic survey I have developed an interest in acoustic and sonar theory, especially in terms of Multibeam Echosounder operation.

## **Other Interests**

I have been an avid surfer for over 19 years, and have travelled extensively around the world to this end. I am also a keen, though inexperienced, sailor. I enjoy reading, particularly anything concerning the ocean and weather, as well as natural science in general.