



October 2011 Newsletter

Executive Summary

Anglo American joins DET CRC.

DET CRC goes to 'The Hill' and meets Minister Carr.

AGM telecon on 25 October 2011.

Opportunity Funding announced, projects prioritised and now being finalised.

Coiled tubing drilling operations reviewed in the US.

Keynote speaker confirmed for Annual Conference 20-24 November: Dan Wood, former Executive General Manager Exploration, Newcrest "The Deep Earth Discovery/Mining Challenge — reflections and thoughts".

Register online via DET CRC website for Annual Conference: www.detcrc.com.au

Anna Porter joins DET CRC as administration officer.

Steve Hill receives University of Adelaide, Faculty of Sciences award for excellence in PhD supervision.

16 DET CRC PhD projects commenced.

Affiliate recruitment above target at 28.

Updated DET CRC highlights slides available for company presentations.

Know Your DET CRC Researcher: Caroline Forbes.

Top Ten Project Highlights Q3 2011

'Review of existing drilling technologies for application to hard rock exploration drilling' available and forms basis for greenfields coiled tubing rig project going forward.

Sensors (inductive charger, battery and electronics) embedded in wall of a composite drill rod sub.

Boart Longyear SC 9 drill and support equipment set up at Brukunga site and 'drill collar' established.

Seismic-while-drilling recording systems deployed at Brukunga site. Numerous other researcher group visits.

Downhole geochemical logging tool essentially complete with electronics being finalised. Work commenced on Smart Winch Controller.

Circuitry completed for world's first LWD (natural gamma) system for minex: to be housed in autonomous shuttle and deployed in rods.

Initial tests of cloud-based potential-field inversions.

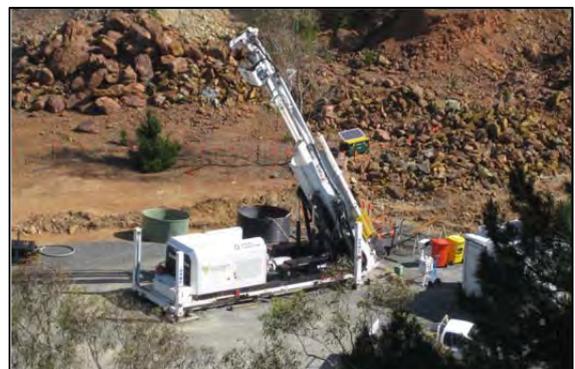
Seismic survey at Rex Minerals' Hillside discovery. Results at the Annual Conference.

Report on best practise workflows and traps for the unwary in the use of portable XRFs available and will be key aspect of Conference Hillside Field Trip.

Game-changing results on calcrete sampling to be presented at in-house session of Conference



DET CRC CEO Richard Hillis shows Minister Kim Carr (responsible for the CRC program) a mock-up of a carbon fibre drill rod at Parliament House.



Boart Longyear's SC9 Rig on site at Brukunga. Green box behind rig is part of Project 2.1's seismic-while-drilling recording system.

Anglo American Join DET CRC

We are delighted that Anglo American has joined DET CRC. Anglo American's participant contact is Jeremy Mann (Head of Geosciences, Process & SD Technology Development and based in Johannesburg). DET CRC seeks new participants and affiliates in order to:

- expand its funding base and thereby maximise financial support to its research activities;
- expand the expertise base inputting to project prioritisation, design and monitoring, and;
- maximise the uptake of its outputs.



DET CRC Project 3.1's PhD seismic crew at Hillside.

DET CRC Goes to the Hill

DET CRC presented some early outcomes to Government Minister Kim Carr (Department of Innovation, Industry, Science and Research which administers the CRC program) at a function at Parliament House. The event was arranged by the CRC Association and CEO Richard Hillis, Chair Tom Whiting and Kent Hoots of Boart Longyear attended on behalf of DET CRC. The ministerial event was combined with a CRC Association event to develop the CRC Association's budget submission for 2012 which will seek increased funding for the CRC program.



Initial circuitry and sensor for world's first LWD system for minex: to be housed in autonomous shuttle and deployed in rods (Project 2.2).

AGM

The DET CRC AGM is to be held by telecon at 9.30 am Australian Central Daylight Time (Adelaide summer time) Tuesday 25 October 2011. All Participants, Other Participants and Affiliates are entitled to attend. Please contact Ian Hardwick if you would like dial in details.



Geochemical logging tool (Project 2.2).

Opportunity Fund

The entry of Anglo American into the DET CRC and the Board's decision to allocate carry forward funding from the delayed start-up of projects has meant the creation of a \$5.3M Opportunity Fund. The Opportunity Fund concept was developed in planning the CRC and it is an outstanding outcome that the Opportunity Fund has been enacted at this early stage and that we thus have the opportunity to apply funds to:

- deliver early commercialisable outcomes;
- address gaps in our current portfolio of projects with respect to achieving the CRC's vision;
- further integrate service providers into research activities, and;
- ensure we hit Commonwealth Agreement milestones.

Project and Program Leaders have made proposals to this fund and the Science Steering Committee met to assess the priorities for the fund in Perth on 15 September. It is anticipated that a portfolio of project proposals for the Opportunity Fund will be finalised (and resubmitted to the Science Steering Committee) during October and November with projects starting at the beginning of 2012.



Boart Longyear's SC9 Rig on site at Brukunga.

Reviewing Coiled Tubing Operations in the US
Program 1 Leader Gary Cavanaugh undertook a technical visit to coiled tubing drilling companies located in Texas during August. Facilities visited included: coiled tube rig manufacturers, coiled tube manufacturers, mud cleaning system manufacturers, downhole motor manufacturers and a coiled tube well design company. Tubing fatigue (with respect to number of cycles) was a key topic of review on the trip which included a day on site at a coiled tube rig that was working on a 3 km long hole with a vertical trajectory for the first 1.5 km and horizontal for the last 1 km. From entry to the hole it took 40 minutes to trip 3 km to the bottom of the hole.

First Annual Conference: 'Uncovering the Future I', 20-24 November 2011, Hahndorf, SA
Plans are being finalised for the Annual Conference and registrations are running strongly. Please ensure you register via the online website. Some highlights:

- Sunday field trip to Rex Minerals' Hillside discovery is already waitlisting (capped at 40), but do still register if you are keen as we may free up some extra places;
- Sunday afternoon workshop on seismic exploration in the hard rock environment by Milovan Urosevic et al. confirmed at the University of Adelaide;
- launch of the Brukunga Drilling Research and Training Facility by to-be South Australian Premier, Jay Weatherill on the Monday;
- summaries of and breakout discussions on all DET CRC projects;
- Affiliates session;
- Dan Wood, Director, Highlands Pacific Group and former Executive General Manager Exploration, Newcrest confirmed as conference keynote, speaking on: "The Deep Earth Discovery/Mining Challenge — reflections and thoughts";

- conference dinner at Bird in Hand winery, theme "South Australia: Legends of Rock" including informal interviews with Minotaur Exploration's Derek Carter and other South Australian identities by MC Tim Noonan;
- state-of-the-art presentations on CRC-related mineral exploration methods, and;
- blueprints for the future Greenfields Coiled Tubing Drilling Rig and the Exploration Lab-on-the-Rig.

New DET CRC Admin Officer

After helping with arrangements for the driller training courses, Alex Baker has left the CRC to start as a driller's offsider at Boart Longyear. Head Office is doing its bit to hit DET CRC's driller training metrics!

We welcome Anna Porter as the new Administration Officer. Anna joined the DET CRC in September from the Local Government Association of South Australia. Anna is from Auckland and needless to say a rugby fan. At the time of writing (Friday 14th October), Anna assures me that the Kiwis will beat Australia in the Rugby World Cup semi-final on Sunday. Despite this, Anna will get on well with the geologists in the CRC as she shares their love of the outdoors. If you haven't already met Anna, you will be meeting her either by e-mail or in person over the next few weeks. Please welcome her to the CRC family.

While on the topic of rugby, we appreciate Anglo American and Gold Fields staying with us through this difficult time for Australian — South African relationships.



DET CRC's new Administration Officer, Anna Porter.

Education and Training

Steve Hill has been awarded the Faculty of Sciences award for excellence in PhD supervision at the University of Adelaide. I'm sure everyone will join me in congratulating him on this excellent achievement. As you'll see from the list of current DET CRC student projects and supervisors, Steve is something of a student-magnet.

DRT CRC's PhD program has made an extremely strong start. The necessary legal and procedural agreements are in place and 16 PhD students are already enrolled in CRC projects. A timing pipeline has been established to track the CRC towards its ambitious target of 50 PhD commencements for 40 PhD completions and we are currently tracking well against that pipeline. DET CRC pays \$25K per annum for three years to student projects approved

by Project and Program Leaders. All PhD projects must sit within an existing CRC project.



PhD student Ashlyn Johnson examining weathered limestones on the Yilgam Craton, Eucla Basin margin, Western Australia.

Student	University	Supervisor	Project Title	CRC Project
Amir Mokaramian	Curtin	Vamegh Rasouli	Design of a new downhole motor for coiled tubing drilling in mineral exploration applications	1.1
Andrew Greenwood	Curtin	Milovan Urosevic	Application of vertical seismic profiling for characterisation of hard rock	3.1
Arash Mirahmadzoghi	Adelaide	Noune Melkounian	Drilling stable boreholes in unconsolidated rock formations	1.3
Ashlyn Johnson	Adelaide	Steve Hill	Deep cover interfaces of the eastern Eucla Basin - western Gawler Craton, SA	3.3
Bai Chun Sun	Curtin	Andrej Bona	Seismic while-drilling (SWD) imaging using seismic interferometry	2.1
Benjamin Vanderhoek	Adelaide	Steve Hill	The geochemistry of the deep cover to the landsurface at the Tunkillia Gold Prospect and surrounding region, Central Gawler Craton, SA	3.3
Byron Dietman	Adelaide	Steve Hill	The regolith expression of iron oxide copper gold mineralisation in the southern Olympic Domain, SA	3.3
Charlotte Mitchell	Adelaide	Steve Hill	Horizontal and vertical geochemical dispersion in deep cover: 4D landscape geochemistry of the Mundi Mundi Plains, Curnamona Province SA & NSW	3.3
Hossein Bineshian	WA	Arcady Dyskin	Effects of bending moment on failure mechanisms in the cutting process	1.2
Konstantin Tertysnikov	Curtin	Roman Pevzner	Seismic imaging in hard rock environments	3.1
Masood Mostofi	Curtin	Vamegh Rasouli	Intrinsic specific energy diamond bit hard rock drilling.	1.2
Mohammadreza Kamyab	Curtin	Vamegh Rasouli	Investigation of Erosion and Cutting Settlement in Coil Tubing Operation for Use in Air Core and Reverse Circulation Drilling in Mineral Exploration.	1.1
Sayedsaeid Hashemi	Adelaide	Noune Melkounian	Drilling and Maintaining Stable Boreholes in Unconsolidated Rock Formations	1.3
Sinem Yavuz	Curtin	Boris Gurevich	Targeting of mineral resources from seismic data	3.1
Stephanie McLennan	Adelaide	Steve Hill	4D geochemical evolution and inter-relations of deeply covered terrain in the Musgrave Province, central Australia	3.3
Verity Normington	Adelaide	Steve Hill	The palaeo-environmental reconstruction and geochemistry of the Permian deep cover in southern Australia	3.3

DET CRC's current PhD projects.

Affiliates

The following are either confirmed affiliates or, in the case of HiSeis, have indicated that they wish to join DET CRC as affiliates and are awaiting approval by Participants. DET CRC's current total of 28 affiliates already exceeds the 17 affiliates foreshadowed in the CRC's Commonwealth Agreement.

Juniors	Service Providers	Surveys
ABM	ADIA	GA
Carpentaria	Diamant (a Tercel Co.)	NSW
Heathgate	Diarotech	NT
Minotaur	Downhole Surveys	QLD
Nautilus	Easternwell	VIC
Paladin	FUGRO	WA
Rex	Geomole	
Tanami Gold	Globaltech	
	HiSeis	
	Imdex	
	JK Tech	
	Olympus Innov-X	
	Sandvik	
	Teakle Composites	

DET CRC's current affiliates.

DET CRC Highlights Slides

Please contact Richard Hillis if you'd like to receive the updated DET CRC highlights slides.

DET CRC Background

DET CRC will develop more cost-effective, safer and more environmentally-friendly methods for deep mineral exploration

- incorporated entity with independent board
- \$53M cash & \$62M in-kind support over 8 years from Australian government and participants
- participants include miners, research providers and service companies
- DET CRC head office is co-located with Boart Longyear's new Asia Pacific office in Adelaide
- 12 projects scoped by industry have commenced and are contracting over 100 researchers in 9 different organisations
- unique model of commercialisation of IP through the service sector
- participants: \$450k pa (~31x leverage)
- affiliates: \$10k pa with colleges for juniors, service providers and geological surveys



DET CRC will deliver revolutionary new technology such as coiled-tubing drilling systems with logging-while-drilling capability. Drilling and logging results will be fed real-time to remote geological modelling capability in order to plan immediate (within 24 hours) follow-up drilling.

DET CRC Progress: Oct 2012

Anglo American joined DET CRC and Opportunity Fund created to fast track commercialisable outcomes and fund key new projects

- existing projects ongoing for 9-12 months as of end September 2011
- coiled tubing (CT) drilling operations reviewed in US and plans for DET CRC greenfields CT rig projects developed
- first sensors embedded in new carbon fibre drill rod
- test hole commenced at Brukunga Test Facility and circuitry completed for world's first logging-while-drilling (natural gamma) system for minex
- geochemical neutron logging tool manufactured
- first geophysical inversions undertaken 'on the cloud': key step to integrating real-time drilling data acquisition and decision making for greenfields drilling
- seismic survey undertaken at Hillside discovery
- game-changing results on calcrite sampling methodology (confidential to CRC sponsors)
- best practice developed for portable XRF analysis
- 16 PhD projects commenced



Coiled tubing drilling will permit cheaper, faster and safer drilling of more stable holes because pipe connections are not required. Logging-while-drilling will remove or greatly reduce need for core and lengthy core analysis. Combined with real-time geological modelling, these will permit follow-up drilling without rig de-mob and re-mob.



Know Your Researcher: Caroline Forbes University of Adelaide, Projects 3.2 & 3.3



Projects 3.2 & 3.3 Researcher Caroline Forbes.

Caroline completed her undergraduate, MSc and PhD studies at Monash University, finishing her PhD in 2004. She then spent two years in Perth with the Geological Survey of Western Australia before moving to the University of Adelaide to resume her academic career. Outside of research she has a dream to 'see the world on a plank' by travelling and snowboarding. Currently she is even more excited about getting married later this year!

Caroline is involved in Projects 3.2 and 3.3. These projects focus on the geochemistry of basement and cover sequences hosting and proximal to mineralization. In particular she is working on understanding geochemical vectors towards mineralization using resistate mineral phases in basement and cover rocks. The results of these projects will give insights into how we can best utilize real-time data collection and maximise the efficiency of 'lab-on-the-rig' technologies being developed in the DET CRC.

Caroline says "seeing the collective impact the DET CRC projects will have on future drilling and exploration methods is something to look forward to!"

Richard Hillis
October 2011