

# Alligator Rivers Region Advisory Committee Meeting 29, 18 March 2008

## Draft Minutes

Venue: Conference Room – SSD Conference Room, SSD Darwin.

Agenda Item		Action
1	<b>Welcome</b>	Chair
2	<b>Apologies and Observers</b>	Chair
3	<b>Minutes of Meeting 28 – August 2007</b>	Chair
4	<b>Business arising from previous minutes</b>	Chair
5	<b>ERA Ltd developments – Ranger and Jabiluka</b>	ERA
6	<b>Supervising Scientist report</b>	SSD
7	<b>Dept of Primary Industry, Fisheries and Mines Report</b>	DPIFM
8	<b>Issues raised by environment NGOs</b>	ECNT
9	<b>Hanson Pty Ltd – Nabarlek</b>	Hanson
10	<b>South Alligator valley mine rehabilitation</b>	Parks
11	<b>Exploration</b>	
	11.1 Cameco	Cameco
12	<b>Other Member Reports</b>	
	12.1 Australian Radiation Protection and Nuclear Safety Agency	ARPANSA
	12.2 Department of Resources, Energy and Tourism	DRET
	12.3 Northern Land Council	NLC
	12.4 Parks Australia North	Parks
	12.5 NT Department of Health and Community Services	DHCS
	12.6 NT Department of Natural Resources, Environment & the Arts	DNRETA
	12.7 Other stakeholders reports	
13	<b>Other Business</b>	
14	<b>Next Meeting</b>	

## 1. WELCOME

The Chair opened the meeting and welcomed members and observers. Mr Hughes provided a briefing on SSD facilities and fire evacuation procedures.

## 2. APOLOGIES AND OBSERVERS

The Chair noted apologies from the following members:

<b>Apologies</b>		
<b>Name</b>	<b>Position</b>	<b>Organisation</b>
Mr Philippe Portella	Member	AFMECO Mining and Exploration Pty Ltd
Dr Peter Burns	Member	Australian Radiation Protection and Nuclear Safety Agency
Ms Jennifer Parks	Member	Cameco Australia Pty Ltd.
Mr Peter Robertson	Member	Environment Centre Northern Territory
Mr Mike Ellsmore	Member	Hanson Australia Pty Ltd
Mr Xavier Schobben	Member	Northern Territory - Department of Health and Community Services
Mr Ian Newnham	Member	Jabiru Town Council
Mr Mark Foy	Member	Northern Land Council
Mr Richard Sellars	Member	Northern Territory - Office of the Administrator
Ms Marie Taylor	Member	Australian Government - Department of Resources, Energy and Tourism
Ms Lyn Allen	Member	NT Department of Primary Industry, Fisheries and Mines
Mr Peter Cochrane	Ex Officio	Australian Government - Parks Australia

The Chair noted the attendance of the following Members, Deputy Members and Observers:

<b>Members/Deputy Members</b>		
<b>Name</b>	<b>Position</b>	<b>Organisation</b>
Prof Charles Webb	Chair	Charles Darwin University
Dr Richard O'Brien	Deputy Member	Australian Radiation Protection and Nuclear Safety Agency
Mr Keith Tayler	Deputy Member	Cameco Australia Pty Ltd
Mr Suresh Rajapakse	Member	Energy Resources of Australia Pty Ltd – Ranger Mine
Mr Geoff Kyle	Deputy Member	Gundjeihmi Aboriginal Corporation
Ms Carolyn Barton	Deputy Member	Australian Government - Department of Resources, Energy and Tourism
Ms Gillian Jan	Deputy Member	Northern Territory Office of the Administrator
Mr Michael Lawton	Deputy Member	NT Department of Natural Resources, Environment and the Arts
Mr Gary Martin	Deputy Member	NT Department of Primary Industry, Fisheries and Mines
Mr Russell Robinson	Deputy Member	NT Dept of Health and Community Services
Mr Alan Hughes	Ex Officio	Supervising Scientist Division
Mr Richard McAllister	Deputy Member	Supervising Scientist Division

<b>Observers</b>	
<b>Name</b>	<b>Organisation</b>
Ms Nicole Hinton	Australian Government - Department of Resources, Energy and Tourism
Mr Mark Rumler	Northern Land Council
Mr Russell Ball	NT Department of Primary Industry, Fisheries and Mines
Mr Brett Steele	NT Department of Primary Industry, Fisheries and Mines
Ms Phillipa Varris	ERA Ltd
Mr Alan Puhlovich	EWL Sciences Pty Ltd
Ms Shelly Iles	EWL Sciences Pty Ltd

Mr Justin Tutty	Environment Centre Northern Territory
Ms Natalie Walsey	Beyond Nuclear Initiative/ Arid Lands Environment Centre
Dr David Jones	Supervising Scientist Division
Dr Ken Evans	Supervising Scientist Division
Dr Rick van Dam	Supervising Scientist Division
Mr Bruce Ryan	Supervising Scientist Division
Ms Jenny Brasier	Supervising Scientist Division
Ms Kate Turner	Supervising Scientist Division
Ms Michelle Bush	Supervising Scientist Division
Ms Carolyn Lord	Supervising Scientist Division
Ms Jeannine Marum	Supervising Scientist Division
Mr Scott Parker	Secretariat/ Supervising Scientist Division

The Chair noted that Mr Scott Parker, Manager, Policy and Coordination, has assumed responsibility for the ARRAC Secretariat as a result of Ms Carolyn Lord taking up a new position within SSD. The Chair thanked Ms Lord for her significant contribution in providing secretariat support for ARRAC over the past three years.

### 3. DRAFT MINUTES – ARRAC28

The ARRAC28 meeting outcomes were approved with no changes.

### 4. ACTIONS ARISING – ARRAC28

The Chair sought comments from members on actions arising from ARRAC28.

Ms Barton enquired about the status of the transfer of responsibilities from DPIFM to NT Worksafe. Mr Ball advised that DPIFM was still receiving reports from ERS which are consolidated into DPIFM's report to ARRAC. He advised there is still some work to be done on reporting arrangements. Ms Barton asked if Worksafe representatives would be attending future ARRAC meetings. Mr Ball advised that Worksafe would probably send a representative to ARRAC meetings if they were invited to do so. Mr Ball advised that arrangements for the sharing of information between agencies, and implications in terms of the *Mining Management Act* (NT) requirements, were still being determined.

Mr Rajapakse advised that the report prepared for the Ranger MTC on the control of seepage from solar ponds had been provided to Mr Lawton, and the monthly Environment Incident Report summaries had been provided to the Environment Centre NT. Mr Kyle asked if he could also be provided the monthly Environment Incident Report summaries. Mr Rajapakse undertook to arrange for the documents to be provided to Mr Kyle.

**ARRAC29 Action 4-1: Mr Rajapakse to arrange for the monthly Environment Incident Report summaries to be provided to Mr Kyle.**

### 5) ERA DEVELOPMENTS – RANGER AND JABILUKA

Mr Rajapakse presented report on recent ERA developments. Key items raised included:

#### *Recent changes in ERA corporate structure*

Mr Jody Clark has been appointed as the Water and Tailings Manager and Mr David Paterson, General Manager, Strategic Planning and External Relations has assumed responsibility for ERA Community Relations reporting to HR Manager. Mr Clark Beyer, Managing Director - RioTinto Uranium Sales, is currently working with ERA.

#### *Safety Improvements*

AIFR and LTIFR have both improved by more than target (70%) and ERA has retained its AS4801 certification retained and completed SQRA. ERA has identified and implemented a number of actions to reduce exposure to workers. Previously there was a significant difference in injury rates between staff and contractors. Performance has significantly improved with reductions in the frequency and severity of injury rates for contractors. Contractor rates are now in line with employee rates. Sprains tend to be the most frequent injuries and the drive from Darwin to Jabiru was assessed as the second highest threat to staff and contractors.

#### *ERA ESH achievements*

ERA Environment Safety and Health culture onsite continues to mature. ERA ran its first ever Corporate Relay for Life event which won the Jabiru Community Event of the Year award. ERA competed in the NT Mine Rescue competition and came first in road accident competition – given the high level of threat posed by road travel this is a good outcome. ERA Disaster Management and Recovery actions rated at 97% for second year running which represents RioTinto best practice. ERA is also enhancing staff induction processes and is working with PAN on various aspects. ERA has hosted visits by Kakadu TOs. All contractors are required to undergo an induction process to understand about living and working in Kakadu.

#### *ERA indigenous employment*

ERA indigenous staff appointments have increased to 16% with a target for 2008 of 20%. ERA currently employs over 72 indigenous employees and is focused on developing sustainable roles and outcomes for indigenous people as part of the mining enterprise.

#### *Production*

Currently mining is in line with 2007 forecast. Two new trucks, excavator and dozer recently arrived on-site. Focus currently on stockpiling of ore from bottom of Pit#3 and pre strip of Shell 50. A total of 5412 t production achieved and 2007 deliveries met. Grade set point being maintained at 0.3%. Water in Pit#3 significantly reduced since last year. Current wet season is about average so ERA expect to be able to mine bottom of Pit#3 during the dry season. ERA is currently looking to raise production to 2005 levels. The acid plant shut down in January 2008 and acid is now totally trucked in.

#### *Water Treatment Plant*

The WTP is consistently operating at about 5.5 ML per day. Testing has shown the WTP can operate with lower chemical addition so a proposal to remove front end treatment has been submitted to MTC. A proposal for Osmoflo plant has also been submitted to the MTC and ERA is looking to get operational by April 2008. Significant amount of additional instrumentation has been installed. Based on results from operation of the pilot plant last year, ERA has reduced the amount of chemicals required to clean the system. Scheduled to commence commissioning end Q3 2008. Plant modifications to be focussed on pre treatment for process water system made prior to this time. Regarding process treatment, ERA hopes to recommission the WTP later this year using previous design.

#### *TSF*

TSF lift to RL51 was completed on 21 December 2007 with no recordable injuries being reported. ERA employed a new approach to construction safety using windrows. ERA has approval to operate at 47.5m and 48.0m RL MOL. An application for 49.5 and 50.0mRL has been submitted to MTC.

#### *Laterite plant and radiometric sorter*

Some plant has arrived in Darwin and is being brought to site. Some site works are complete and significant activity is continuing. The radiometric sorter is expected to be commissioned in June 2008 and the laterite plant in July 2008.

#### *Processing improvements*

ERA is currently looking at short term options for dealing with harder ore at depth. ERA will be testing and then presenting applications to MTC with a view to improving overall recovery. A number of projects looking to improve metallurgical performance have been initiated dealing with both extraction and recovery. HME and fixed plant asset maintenance evaluation is underway and ERA is looking to improve maintenance of mobile and fixed plant.

#### *Heap leach*

Experimental work is being undertaken to assess if heap leaching is worth consideration and results from testing so far look good. Acid consumption has been at level anticipated. This work has included a review of best practise worldwide (including in Chile and Brazil) including high rainfall operations. ERA believe with best technology heap leach can run efficiently and effectively without impact on environment. Environmental studies of rainwater flushing of heap residues are progressing and 4m high columns have achieved good extraction rates. ERA will keep ARRAC informed as work progresses.

Mr Rajapakse handed over to Ms Varris who provided an update on ERA environmental management activities. Key items raised included:

#### *Environmental management*

There has been a 7% decrease in landfill waste produced per person at Ranger due to ongoing focus on onsite recycling and waste reduction. ERA is currently looking at waste streams and opportunities to integrate waste management activities with Jabiru Town Council. ERA Bird Watch has continued with over 40 participants including many from the local community. A total of 71 species (highest number for 5 yr event run at Ranger) has been recorded, including 2 new sightings (White-Throated Gerygone and Partridge Pigeon). A significant level of total of ~1,377 ML treated for discharge by WTP (07/08 season) and ~2,308 ML treated/discharged via land application, wetland polishing and evaporation (07/08 season).

#### *Weed management*

The ERA weed management program has been highly successful with the total area of weeds mapped decreasing from 99 to 40 Ha from 2006 to 2007. No new weed species were recorded. The significant improvement was due in major part to the doubling of ground management hours to 748 hrs (+148 hrs in non mapped areas); diversification of control measures including use of ATVs; dry season spraying of LAAs; and the unusual distribution of rainfall. Increased participation by staff from KNP and GAC also assisted in the success of the program.

#### *07/08 Wet season monitoring – Ranger – filterable U excursion*

On 7 January 2008, an elevated level of filterable U was recorded at MG009. On receipt of water quality results, ERA closed the RP1 sluice gate, confirmed that culverts remained securely shut, undertook additional sampling and commenced an investigation into the incident. The investigation identified three release sources which are thought to have contributed to the elevated filterable U levels detected. The major source was identified as controlled releases from one of the access road culverts. The elevated reading posed no risk to the environment.

#### *Incidents*

Ms Varris advised there has been a number of reportable incidents during the period.

*6 September 2007* – Processing crud splashed on technician when servicing vacuum truck. The vacuum truck was overfilled and the technician was splashed as he opened the filter inspection unit. The material was contained and cleaned up. ERA consulted ARPANSA and determined that the exposure risk was low. The worker underwent 24 hour urine analysis and consulted an occupational physician - no issues were identified. Stakeholders were notified. As a result ERA has implemented a number of modifications to the SOP for the vacuum truck, installed a sight glass in filter housing and main compartment, and modified suction to incorporate check valve to close at high level.

*17 September 2007* – 300L of water entered storm drain when vacuum truck overflowed during clarifier tank clean out. The drain was bunded and the spill was cleaned up. Inspection confirmed that the water had absorbed into that drain only. Confirmation sampling was carried out and irrigation was stopped until confirmation that RP2 was not affected. Stakeholders were notified and the vacuum truck stood down until corrective actions had been completed.

*11 October 2007* – a failure to identify potential radiation hazard occurred when contractors were descaling process water lines without appropriate PPE. An assessment by RSA determined exposure was minimal. ERA consider this incident as a near miss and has implemented a number of long term controls. A flag has been incorporated into the Permit to Work to prompt referral to procedures for managing radiation hazards. A works order system to prompt use of work instructions. ERA will also conduct radiation survey of plant to identify all potential exposures from radiation contained within scale build-up.

*30 December 2007* – bunding across culvert breached releasing water. As part of western stockpile extension, preparatory work was being done for managing water and as part of this work ERA aimed to have sluice gates but, due to time constraints, ended up putting in earthen bunds. During a rainfall

event, an earthen bund failed leading to release of water across Djalkmara Irrigation Area into Coonjimba Billabong. The culvert was blocked off and the bund was re-established to the appropriate standard. Water samples were taken and permission sought and obtained from the regulator to release water.

#### *Closure planning*

In October 2007, evaluation of closure implications was completed for the proposed Shell 50 extension. A substantially revised Ranger Closure Model (v3) was submitted to stakeholders for comment in November 2007. Planning for construction of a demonstration (final) landform in 2008 is progressing. A MTC Closure Criteria Working Group has been established and is preparing a TOR paper due to be completed by April 2008.

#### *Discussion*

Mr Robinson asked what the status was regarding the incident involving emissions from the calciner stack. Ms Varris advised that the incident was a one-off event and subsequent monitoring hasn't shown anything unusual other than a slight increase in emissions over time. Mr Rajapakse advised that ERA has ensured that the scrubber on stack maintains full compliance.

Mr Kyle asked whether it was planned to use full sized columns in the proposed heap leach trials. Ms Varris advised that the project is at an early stage and ERA is currently undertaking testing to better understand the viability of the process and determine various options. Mr Tutty noted that at last meeting he asked about the effect of Shell 50 on the Ranger mine life and ERA provided some numbers. He advised he would be interested to know what the implications are of Shell 50 on the life of mine and tailings management. Mr Rajapakse advised that this has been addressed as part of the information provided to Ranger MTC. Mr Tutty noted that the MTC does not include representation from the public.

Mr Puhlovich also noted that the current closure model includes an assessment of the impacts of Shell 50 and that processing is still expected to cease in 2020. Mr Tutty asked if there would be any milling of ore past this point. Ms Varris advised that the only effect of extending the Pit to Shell 50 is increased access to higher grade ore. Mr Tutty asked if the additional 4800 t of material exposed by Shell 50 will result in more tailings being produced. Mr Rajapakse advised that the Shell 50 extension will not result in any increase in tailings as the same level of processing will continue just with higher grade ore.

Mr Tutty asked whether Shell 50 poses any implications for the closure plan for Pit#1. He also asked whether the Shell 50 application and the revised closure model could be made available for public scrutiny and suggested there should be a broader representation of stakeholder interests on the MTC. Mr Hughes advised that he would take Mr Tutty's suggestions on notice.

Mr Tutty asked whether the incident on 30 Dec 2007 was a major contributor to the major spike in filterable U observed on 7 Jan 2008. Ms Varris advised that in the period from 30 Dec 2007 to 7 Jan 2008 the water quality of water released from behind the bund with approval decreased so although the uranium spike was a result of discharge of the water originally held behind the bund it was not caused by the original breach of the bund. Mr Tutty asked when the breach occurred. Ms Varris advised the breach occurred on 30 December 2007. Mr Kyle noted that the report to the MTC said that breach occurred on 30 Dec 2007. Mr Tutty asked when the bund was re-established. Ms Varris advised the bund was re-established on 30 December 2007 and earth moving equipment was mobilised on 31 December 2007. Mr Tutty asked when the release commenced. Ms Varris advised the release commenced after the approval was received but indicated she would confirm this.

**ARRAC29 Action 5-2: Ms Varris to confirm and advise Mr Tutty whether the release of water on 31 December occurred prior to, or following approval to release being received from the regulator.**

Mr Tutty asked whether the slide Ms Varris had shown about the measurements on 7 January 2008 showing filterable Uranium was the same chart that is in the SSD report. Ms Varris confirmed this was the case.

## **6) SUPERVISING SCIENTIST REPORT**

Mr McAllister tabled the Supervising Scientist report for ARRAC29. He advised that there has been a number of staff changes in the Supervision and Assessment area with Ms Davis-Hall and Ms Iles both resigning to take up positions in the private sector. Mr McAllister advised that recruitment action to fill the position of Director, Supervision and Assessment was underway. He also advised that Mr Peter Waggitt, whom has spent a number of years seconded to the International Atomic Energy Agency, has also resigned from the Department.

### ***Supervision and Assessment***

Mr McAllister handed over to Ms Michelle Bush who provided a presentation on supervision and assessment activity since the last meeting. Key items raised included:

#### ***Ranger***

Six formal applications have been assessed by the Supervising Scientist in the reporting period and the current Authorisation 0108-09, was issued on 4 January 2008. SSD assessed and provided feedback on the following applications to MTC:

- Modification of the radiation monitoring program
- Extension of Pit 3 to Shell 50
- Increasing the Tailings Storage Facility maximum operating level to 48.0mRL
- Expansion of the Western Stockpile
- Construction of laterite and radiometric sorting plants
- Modifying the pond water treatment process through the water treatment plant.

The Annual Environmental Audit review for Ranger was undertaken on 12 December 2007 focusing on outstanding issues from the audit of the Ranger Radiation Management Plan, which is part of the Radiation Management System implemented to ensure that the operations comply with Authorisation 0108-09. Of the 27 criteria assessed in May 2007, one finding was ranked as satisfactory but improvement recommended. The criteria ranked S/I related to attendance records for new staff members for radiation inductions. Based on the objective evidence provided during the review, the audit team was satisfied with the manual procedure that ERA has developed to cross-check employee records with induction attendance.

Five Routine Periodic Inspections (RPIs) were carried out during the reporting period in addition to the brief inspection conducted in conjunction with the December Audit review.

- September 07: RP1 wetland filter, solar ponds, sulfur unloading facility
- October 07: Sumps breached during March 2007 rainfall event, solar ponds, Djalkmara sump
- November 07: Solar ponds decommissioning, western stockpile expansion commitments
- December 07: Pyrolusite thickener and leach tanks (in addition to audit review)
- January 08: Landfill, Tailings Storage Facility lift, culvert breach on access road
- February 08: Jabiluka rehabilitation, radioactive hydrocarbon storage, western stockpile water management, Corridor Creek Land Application Area

#### ***Jabiluka***

The Annual Environmental Audit review for Jabiluka was undertaken on 12 December 2007. The subject of the review was re-assessment of the outstanding issues from the Jabiluka Authorisation 0140-03 audit in May 2007, specifically relating to the requirement to maintain the site in a state of care and maintenance, by undertaking activities including maintain capping of the vent raise at the surface and conversion to a water sampling point. The audit review determined that ERA had maintained access to the vent raise as far as practicable and was ranked as satisfactory.

#### ***Nabarlek***

Staff from SSD continue to undertake research programs at Nabarlek and the site is subject to at least two formal visits from staff during the year. Two formal site inspections are carried out at Nabarlek each year:

- the post wet season inspection – the intent of this inspection is to check site stability and erosion following the wet season and to plan works for the coming dry season; and
- the annual audit (in November) of compliance with the Mining Management Plan (MMP).

The annual audit of compliance with the MMP was undertaken on 12 October 2007 using audit criteria based on the commitments provided in the current version of the Mine Management Plan (MMP). Of the twelve commitments audited, eleven were given a ranking of 'satisfactory' and one was given a

ranking of 'satisfactory / improvement required'. This was based on the fact that while some Demed rangers are undergoing formal OH&S training through TAFE institutes, there is no on-site procedure to ensure the rangers are made aware of potential safety hazards or other OH&S issues. During the audit process it was determined that two of the criteria were no longer applicable and therefore not subject to audit.

#### *Exploration sites in western Arnhemland*

The Supervising Scientist Division undertakes supervision and assessment of exploration activities on a campaign basis during each dry season. The 2007 dry season inspection was undertaken on 5-6 September 2007 and looked at the following aspects of Myra Camp and King River:

- Camp, kitchen and office areas
- Drill rigs
- Landfill
- Core farms
- Workshop
- Diesel and fuel storage

The inspection found no issues requiring further investigation or follow-up.

#### *South Alligator Valley*

From 6 to 7 November 2007, PAN and SSD staff conducted an inspection of the rehabilitation works that have been largely completed at Sleisbeck, Palette and Koolpin mines, in progress at Guratba, and partially completed at El Sherana village were carried out. Routine inspections of the area of the Saddle Ridge containment and the container storage near the site of the previous South Alligator Village were also done. No major issues were identified during these inspections.

#### **Monitoring – Ranger/Jabiluka**

Ms Bush handed over to Ms Brasier who provided a presentation monitoring activities at Ranger and Jabiluka in the August 2007- March 2008 period. Key items raised included:

The current wet season appears average in terms of rainfall to date. Landslips upstream of the mine related to previous flooding events have resulted in four significant events of suspended sediments moving down Magela Creek in January and February 2008. SSD has installed continuous monitoring equipment to monitor the movement of sediment through the system.

Ranger off-site surface water quality monitoring is continuing and involves:

1. weekly water chemistry grab sampling from Magela and Gulungul Creeks;
2. Continuous data collection from:
  - a. Magela Creek (pH, EC, turbidity, temp, DO (SSD), flow (NRETA))
  - b. Gulungul Creek (pH, EC, turbidity, temp, DO, flow (SSD))
  - c. RP1 & GC2 (pH, EC, flow (ERA));
3. Field toxicity Magela Creek (every second week)
  - a. Creekside monitoring of snail egg production
  - b. In situ monitoring of snail egg production (parallel with creekside monitoring)
4. Bioaccumulation
  - a. Mussels (radium and uranium)
  - b. Forktail catfish (uranium)
5. Community studies
  - Macroinvertebrates (this report)
  - Fish (next report)

#### Magela Creek - Uranium

Ms Brasier advised that SSD samples on different days to ERA. There were two obvious excursions from ERA data occurring on 7 January 2008 (ERA peak 0.93 µg/L) and 29 January 2008 (ERA Upstream 0.38 µg/L), respectively. An investigation into the cause of the event on 7 January 2008 indicated that culvert R3ARC1 was the main contributor. However, the reason for the spike observed in the ERA data on 3 February 2008 was not able to be determined. SSD data suggest that the cause was not related to the landslips. It was noted that current SSD uranium data is tracking similarly to previous seasons. There has been a sustained improvement in the quality of SSD uranium data since 2002. The maximum level recorded by SSD was 0.971 µg/L in January 2001.

#### Magela Creek - Solutes

There has been no elevations in MgSO<sub>4</sub> data during 2007-08 compared to 2006-07. There appears to be nothing in the data of environmental significance.

#### Magela Creek – Continuous EC and Flow

There are some missing data in the record from sondes downstream and upstream. An early season spike in EC was also noted. This spike exceeded a potential Mg limit based on using EC as a surrogate for Mg, however the duration of the spike was short (>2hr) and is therefore not seen as significant given that the proposed Mg ecotox limit is based on a chronic expose of 96 hours

#### Magela Creek – Start of Wet Electrical Conductivity “Load”

The product of flow and EC provides a surrogate measure of total solute load but missing data in late February 2008 prevents adequate comparisons with data for previous years.

#### Magela Creek Radium-226 (2002-2008)

For this season one month composite collected samples weekly and filter fractions and provide monthly report for up and downstream. There is currently little difference between up and downstream in terms of gradient.

#### Gulungul Creek - Uranium

It was noted that there is a large difference between the ERA and SSD data upstream but otherwise good correlation.

#### Field Toxicity – Creekside monitoring Snail eggs 1992 – 2008

There is no significant difference between up and downstream data over past sixteen years. Looking at in-situ versus creekside tanks comparison, in-situ sampling can be deployed earlier in the season with lower flows than the creekside tanks.

#### Field Toxicity – In situ monitoring Snail eggs 2006 - 2008

Noted that in-situ monitoring approach resulted in a larger number of eggs but no significant difference therefore SSD will probably be moving to in-situ monitoring for next season.

#### Bioaccumulation – Uranium in mussels

Data were presented showing levels of Uranium in freshwater mussels in Mudginberri Billabong and a control site (Sandy Billabong). It was noted that mussels contained a very low level of Uranium and the difference between mussels in Mudginberri Billabong and the control site was not significant.

#### Radiation monitoring Ra226

Data were presented showing the levels of Radium-226 contained in mussels of different age classes in Sandy Billabong and Mudginberri Billabong from 2000 to 2007. It was noted that there is no significant difference between the data, Radium-226 levels rise with age and 2007 results are similar to previous years.

#### Bioaccumulation - Uranium in Fish (every two years)

It was noted that the levels of Uranium in fish species in Mudginberri versus Sandy Billabongs is very low and probably below the detection limit of analysis.

#### Macroinvertebrate Communities - Abundance

It was noted the data indicate there is no significant difference between the macroinvertebrate communities in both the potentially disturbed sites and the control sites. One issue that was raised at previous ARRAC meeting related to the availability of data showing impact of flooding on macroinvertebrates. It was noted that based on analysis of abundance data for three streams and Magela Creek it was shown there is lower abundance in both up and downstream sites in Magela Creek due to flooding.

#### Jabiluka - Surface water

It was noted that the site is under Long-term Care and Maintenance (LTCM) and is subject to monthly water chemistry sampling by ERA (up and downstream), DPIFM (check monitoring) and SSD

(independent sampling program – downstream only). Biological studies have been discontinued while the site is under LTCM.

#### Ngarradj - Uranium

It was noted that data this year are same as previous seasons.

#### Ngarradj – Radium-226

SSD data 02-03 to 06-07 seasons: Wet season median difference ~ 0. 2007-08 wet season: No wet season median difference – sampling downstream only.

#### Radiation Monitoring - Jabiru & Jabiru East - Airborne pathway – public exposure

Monthly RDP & LLAA - <1% dose limit from LLAA and the limit is 1 mSv non-natural. 2007 total effective dose is 0.43 mSv (ERA) and 0.47 mSv (SSD) - mSv from mining not available yet. It was noted that ERA and SSD data are in good agreement. Dose component from mining not available as yet but looking at previous data, mining about five percent of total dose.

#### Radiation Monitoring - 4 Gates Road station – near Mudginberri - Airborne pathway – public exposure

Monthly RDP & LLAA - 2007 total effective dose (SSD) is 0.35 mSv from RDP and 0.01 mSv from LLAA - only a small fraction is mining related.

#### Keeping the community informed about SSD's monitoring activities

It was noted that SSD continues to keep the community informed regarding it's monitoring activities through:

- publications – annual reports, SSRs, IRs, etc;
- presentations – seminars, workshops, conferences;
- internet <http://www.environment.gov.au/ssd/index.html>
  - o results of SSD environmental monitoring program
  - o Email notification of updates to web pages;
- ARRAC & ARRTC & MTCs;
- other Committees/Boards – eg Kakadu Research Advisory Committee; and
- attending and staffing displays at Mahbilil, Gunbulunya open day and other community events.

#### Communicating through Indigenous employment

It was noted that SSD communicates with indigenous stakeholders through a range of activities including:

- preparation for creekside monitoring;
- mussel and other bush tucker collection;
- pop-netting; and
- maintaining the JFS aquaculture area.

Involvement in these programs enables staff to provide information to local residents in a hands-on practical manner.

#### Informal Communication

SSD also undertakes a range of informal communications with indigenous stakeholders through regular informal information sessions with traditional owners, other local indigenous people and their associations and through:

- permit applications;
- EnRad BBQs – posters, informal chats;
- ACO explains monitoring results to communities; and
- hosting visits to JFS during creek side monitoring

#### **Discussion**

Mr Tutty asked Ms Brasier to explain the work on fish larvae being done upstream. Ms Brasier explained that fish larvae are less sensitive to mining impacts due to the lower observed survival rates of fry in upstream samples and therefore are not particularly good biological indicators. Mr Tutty asked whether the fish larval work being done upstream that is mentioned in the SSD ARRAC29 report. Dr Jones advised that this is developmental work looking at achieving better survival rate of fish larvae upstream sampling sites.

Mr Tutty noted that the work on Uranium in mussels and asked whether the data on mean concentration of Uranium show a rising trend for mussels in Mudginberri Billabong. Ms Brasier advised that, as there is only one data point, there is insufficient data to be able to suggest any trend exists. She suggested that the data point was probably due to the time of season when the sample was taken. Ms Brasier noted that the value is still very low at < 5 ???. Dr O'Brien agreed that significantly more data would be required in order to determine any trend. Mr Tutty asked whether the site was a good control site. Ms Brasier advised that **eriss** has been looking at Bowerbird as a potential control site and that data from a number of sites are currently being analysed. She noted that at this stage there is not a significant difference in data between the control site and downstream.

Mr Tutty noted that at the last meeting, there had been some interesting discussion regarding conductivity in Magela Creek which had focused on the integrity of data from other agencies and the relationship between continuous and discrete monitoring. He noted that it was also agreed that it would be useful to map the continuous and discrete data. Ms Brasier advised that this was already being done. Mr Tutty noted this but stated this should be tabled in annual reports.

Mr Tutty asked about the observed spike in EC in the presentation. Ms Brasier advised that Dr van Dam would address this issue in his presentation. Mr Tutty indicated he is interested in how the spike relates to the incident that occurred on 7 January 2008. Ms Brasier advised that there is no relationship between EC and U concentration but **eriss** is currently doing further research. Mr Tutty indicated that he understood the relationship between EC and U is complex, but he assumed that the spike represented an event and should be looked at. Ms Iles advised that the relationship between EC and U concentration was looked at as part the investigation undertaken by ERA. She advised that an examination of the data, including data from SSD, showed there was no link between the two.

Dr Jones advised that an analysis of the ERA and SSD EC data showed the small rise was probably related to the ERA release but not the large U spike. Mr Tutty asked what SSD attributed the large spike to. Dr Jones advised that the root cause of the large spike was unknown, but he suspected it was probably due to a local storm event flushing water from RP1 into the creek. Dr Jones advised that this suggested that RP1 is the major source of oscillating spikes as the ratio changes.

Mr Tutty asked whether data are available for the large spike. Ms Turner advised that data were available covering the spike at about 12.30 am on 5 January 2008 and smaller spike later. Mr Tutty asked whether the data covered the period prior to the approved release and Ms Brasier confirmed this is the case.

Mr Hughes advised that SSD provides data for the information of stakeholders as necessary. He stressed however that stakeholders should bear in mind that the data is primarily collected for research purposes so there are not always answers immediately available to interpret the data. He suggested, however, if providing this "raw" data raises concern for some stakeholders then perhaps it may be better to not release the data until the associated research has been completed. Mr Tutty noted that Mr Hughes made that point clear at the last meeting but indicated that he was still interested in the factors that may have contributed to the spikes observed in the data.

Dr O'Brien noted that the SSD report included figures for the total dose for the airborne pathway at Jabiru. He asked if this was the sum of the backgrounds and queried whether this is actually useful for determining the impact of the mining operation. Ms Brasier advised that **eriss** monitors mine impacts on total dosages in food sources. Mr Ryan advised that the ARRAC29 SSD report includes dietary information and updated doses through ingestion through food for the critical group (living in Mudginberri). Dr O'Brien noted that it can be difficult when dealing very noisy data to identify the mining related component. Mr Talyer asked whether the mining related dose component gets separated out. Ms Brasier advised that **eriss** uses models that look at wind velocity and direction and calculates a figure which is usually very low - around 5%.

In response to an action from a previous meeting, Dr van Dam provided a presentation on aspects of toxicity testing to derive eco-tox based limits. Information was provided on the proposed Mg limit trigger framework and predicted Mg concentrations. Continuous monitoring data are still experimental so we are essentially dealing with things that are not currently operational. This has implications both for whole of wet season and individual events. Toxicity tests/data are used to derive limits. Six species are being used. Exposure is continuous in laboratory not pulse and the emphasis is on sub-lethal

effects rather than lethal. Based on this, the aim is to determine the maximum concentration which is acceptable or safe to that species. For Mg, SSD has proposed framework and toxicity limit and presented this to the MTC and this is currently being formalised.

Under the proposed Mg trigger framework, Mg/Ca ratio needs to stay below 9:1 – the limit then set at 4.6 mg/l. using continuous monitoring data chart for last wet season for predicted Mg at control point. Using this season's data, the large spike would exceed the limit. So looking across these data there are a number of exceedances of the proposed limit but these are of generally short term duration. However, this raises questions about their implications in terms of whole of wet season and individual events.

In terms of whole of wet season implications – looking at weekly grab data there have been some exceedances of focus and action triggers but no exceedances of the limit. Using continuous data raw and 24hr means, 0.12% accidence of the limit equating to ten hrs in total over the two wet seasons – no exceedances using 24hr means. Over the wet seasons there appears to be a very low exceedance frequency, therefore SSD believes the potential environmental impact is very low.

In terms of individual event implications, for most essential metals, toxicity is a function of duration of exposure (e.g. Mg and water flea; CSIRO work on Cu and algae). Based on this it is expected that existing Mg toxicity limits will over protect for short duration events. Given this, spikes observed to date are highly unlikely to be harmful to aquatic biota in terms of Mg concentration.

## **7 DEPT OF PRIMARY INDUSTRY, FISHERIES AND MINES REPORT**

Mr Ball presented the DPIFM Supervision and Monitoring Report for ARRAC29. The report provides a summary of variations to the Authorisation and operational approvals, safety and environmental incidents during the reporting period. The report also provides a comparison of groundwater data from sites sampled during the reporting period at Ranger and other data. Key items raised included:

### *MTC meetings*

Ranger and Jabiluka MTCs meeting were held on 1 October 2007, 23 November 2007 and 25 January 2008, and a meeting of the Nabarlek MTC was held on 12 October 2007. There were two variations to the Ranger Authorisation and one variation to the Jabiluka Authorisation approved during the reporting period as follows:

### *Ranger Authorisation*

- on 8 November 2007 (108-08) to change the reporting date of the Annual Environmental Report from 6 October to 16 December each year, and
- on 4 January 2008 (108-09) to allow ERA to operate the tailings storage facility at an interim level of RL+48.0m under agreed conditions; and

### *Jabiluka Authorisation*

- on 1 November 2007 (0140-05) to modify aspects of the monitoring program with regard to the frequency, type and manner of samples collected at designated sites under agreed conditions, and change the reporting date for the Annual Interpretative Report from 31 August to 16 December each year.

### *Incidents*

There were a total of 48 reported incidents (49 mentioned in DPIFM report but one is double up) during the reporting period, of which 10 were also reported to Worksafe NT as safety incidents.

### *Ranger Mine - Operational approvals*

Pit#3 works are still subject to MTC sign off. Several projects were approved during the reporting period including the construction of the Laterite Treatment Plant and Radiometric Sorting Plant on site, and the expansion of the western stockpile.

### *Ranger Pond inventory*

The pond water inventory has increased during the reporting period. By late in the dry season 2007, the inventory in Pit#3 had been reduced enough to allow mining at floor level and actions are ongoing to reduce pond water inventory; including: use of unused land application areas; pond water

treatment; irrigation of stockpiles; continued use of evaporation basins on southern stockpiles; and use of pond water for dust suppression.

#### *Groundwater Monitoring and other data*

##### *Magela Land Application Area*

ERA/DPIFM bore83/1 EC and U conc. measured over last five years. DPIFM monitoring six monthly and ERA quarterly. Mr Ball noted that there is still some uncertainty about the reasons why the data don't match. He noted that last meeting there was discussion regarding possible reasons and it was suggested the variance could be due to differences in the method and timing of sampling. It was noted that ERA takes a one grab sample whereas DPIFM takes number of samples and averages. There is better correlation between DPIFM and ERA data for electrical conductivity at Observation Bore 27 but still significant differences in the sulfate data. It was noted that there used to be very good correlation between ERA and DPIFM data and further work is required to understand the reasons why this is no longer the case.

##### *Jabiluka*

No groundwater monitoring was undertaken during the reporting period.

##### *Nabarlek*

DPIFM has had discussions with Hanson about removing fencing and other minor infrastructure but no formal application has been submitted to DPIFM as yet.

## **8 ENVIRONMENT NGO ISSUES**

Mr Tutty advised that he had no issues to raise at this time.

## **9 HANSON PTY LTD – NABARLEK**

There was no report tabled by Hanson Pty Ltd.

## **10 SOUTH ALLIGATOR VALLEY MINE REHABILITATION**

Mr Balding provided a presentation on the status of the rehabilitation of former uranium mines in the South Alligator Valley. The sites have been divided into various areas depending on radioactivity. Consultant worked with *eriss* staff on design of the disposal pit. Decision yet to be made on the cut off point for material that will need to be removed from containments and stored in pit.

Last September, a risk assessment was undertaken and the rehabilitation plan developed in consultation with stakeholders in 2003 was implemented during 2007. Asbestos was removed from various sites. Accommodation block saved as it is of potential heritage value however structural issues will need to be addressed to allow its use as a potential visitor/display centre.

##### *Discussion*

Mr Ball asked what quality was the water in Sliesbeck pit. Mr Hughes advised that the water was of reasonable quality.

## **11 EXPLORATION**

### **11.1 Cameco**

Mr Tayler advised that Cameco is progressing with its exploration business as usual in west Arnhemland.

There have been two incidents since the last meeting:

1. A fire in a loader bucket fire became uncontrolled near Myra camp. No rainforest pockets were affected. Cameco has purchased fire fighting units mounted on vehicle and is also looking at getting non-ferrous strips to put on loading bucket.
2. On 15 September 2007, a contractor pumped diesel into fuel bund due to a staff conflict. Staff were asked to leave site. The spill affected the middle of the camp but there was limited

exposure and most of the fuel ended up in the fuel bund. Contaminated soil was removed. Cameco has instigated criminal checks for new staff.

Mr Tayler advised that Cameco has drilled around 30 holes and 600 air core holes and noted that there is difficulty getting drilling contractors this year. The work program for 2008 has not been finalised and the first work program meeting with stakeholders will be held in early April. Mr Tayler advised that Cameco's tenement position hasn't changed much and there are a few tenements awaiting approval from Department of Primary Industry, Fisheries and Mines. He indicated the 2008 season was likely to be similar to last year's season.

## **12 MEMBER REPORTS**

### ***12.1 Australian Radiation Protection and Nuclear Safety Agency***

Dr O'Brien provided the ARRAC29 report from ARPANSA. He advised that work was continuing on the review of the ICRP 103 and a number of other documents. Dr O'Brien advised that the revised ICRP 103 has generally the same approach and deals with planned and existing situations (including legacy sites). He noted that the dose limits haven't changed. Dr O'Brien noted the other document in draft form deals with the protection of the environment and use of plants and animals. He advised that comments on this document are due by the end of March.

Dr O'Brien advised that the other draft document being considered is a safety guideline for naturally occurring radioactive materials which is a supplement to the existing safety mining guide and is about to go out for comment. He advised that ARPANSA had no other issues for ARRAC at this time.

### ***12.2 Australian Government - Department of Energy, Resources and Tourism***

Ms Barton provided a report on behalf of the Department of Resources, Energy and Tourism. Key items raised included:

- The change in the Department's name following the change of government.
- Work is continuing on a range of uranium industry development policy issues including financial and public benefits of the uranium industry, uranium export approval arrangements and the implementation of the Uranium Industry Framework.
- A radiation safety course aimed at different government agencies will be developed in early 2009 and a video is being developed for State transport agencies on changes in the national code. Work on indigenous engagement with the uranium industry is continuing and an information road show and workshop program is being developed for traditional owners and other relevant indigenous stakeholders. Principles and guidelines for indigenous engagement are also being developed.
- A video on radiation is awaiting funding approval and the development of a national radiation dose register and safety guide is being progressed in conjunction with ARPANSA.
- Consultancy looking at streamlining uranium industry regulation is progressing and a draft final report is currently being reviewed by industry and government stakeholders. It was noted that most of the recommendations apply to South Australia.
- Work is progressing on proposed changes to the current uranium royalty regime. DRET is currently talking to Treasury and the proposal is expected to be approved in next 12 months.

#### *Discussion*

Dr O'Brien asked whether ANSTO is involved in developing the training guide and Ms Barton confirmed this. Mr Tutty asked whether there would be public reports from each of the UIF Working Groups. Ms Barton indicated each of the Working Groups would be producing public reports. Mr Tutty noted that the ACF has developed some relevant information resources and offered to provide to DRET which may be useful in developing the proposed brochures for indigenous stakeholders. Ms Barton noted this and indicated she would be interested in getting further details on what ACF has produced.

***ARRAC29 Action 12.1: Mr Tutty to provide Ms Barton with further details on material produced by ACF on indigenous stakeholder perspectives in relation to uranium mining.***

### ***12.3 Northern Land Council***

Mr Smith advised that NLC had no matters to raise at this time.

### ***12.4 Parks Australia North***

No matters were raised by Parks Australia North.

***12.5 NT Department of Health and Community Services***

No matters were raised on behalf of the NT Department of Health and Community Services.

***12.6 NT Department of Natural Resources, Environment & the Arts***

No matters were raised by the NT Department of Natural Resources, Environment and the Arts.

***12.7 Other Stakeholders***

No matters were raised by other stakeholders.

**13 OTHER BUSINESS**

No other business items were raised.

**14 NEXT MEETING**

ARRAC agreed to hold its next meeting in August 2008 on a date to be fixed. ARRAC agreed that the Secretariat would circulate suitable dates to members and confirm out-of-session.

The meeting was closed at 2:30pm.

<b>Item</b>	<b>Action</b>	<b>Resp</b>
ARRAC29 Action 4-1	<i>Mr Rajapakse to arrange for the monthly Environment Incident Report summaries to be provided to Mr Kyle.</i>	Mr Rajapakse
ARRAC29 Action 5-1	<i>ERA to keep ARRAC members informed on progress and results of heap leaching trials.</i>	ERA
ARRAC29 Action 5-2	<i>Ms Varris to confirm and advise Mr Tutty whether the release of water on 31 December 2007 occurred prior to, or following approval to release being received from the regulator.</i>	Ms Varris
ARRAC29 Action 12.1	<i>Mr Tutty to provide Ms Barton with further details on material produced by ACF on indigenous stakeholder perspectives in relation to uranium mining</i>	Mr Tutty