

**9<sup>th</sup> Western Canada Sedimentary Basin  
Working Group Meeting  
Minutes**

**Date:** June 19, 2008

**Time:** 8:00 a.m. to 5:15 p.m.

**Venue:** Canad Inn Polo Park, Winnipeg, MB

**Session Chair:** Michelle Nicolas MGS

**Minutes:** Pamela Fulton-Regula, MSTEM, Petroleum Branch

**Present:**

**Alberta Utility Board, Alberta Geological Survey (AGS)**  
Ben Hathway and Dinu Pana

**BC Ministry of Energy and Mines and Petroleum Resources**  
Vic Levson

**EERC, Plains CO<sub>2</sub> Reduction Partnership**  
Jim Sorensen and Steve Smith

**Geological Survey of Canada**  
Simon Hanmer (Ottawa)  
Bill Reynen and Martin Fowler (Calgary)

**Manitoba Museum**  
Graham Young

**Manitoba STEM**  
Jim Bamburak, Michelle Nicolas and Ric Syme (Manitoba Geological Survey, MGS)  
Keith Lowdon and Pamela Fulton-Regula (Petroleum Branch)  
John Fox (Mineral Resources Division)

**National Energy Board (NEB)**  
Jim Davidson and Rumu Sen

**Northwest Territories Geoscience Office**  
Adrienne Jones and John Ketchum

**Saskatchewan Ministry of Energy and Resources (Petroleum)**  
Chris Gilboy and Melinda Yurkowski

**University of Manitoba, Dept of Geological Sciences**  
Nancy Chow

**Yukon Geological Survey**  
Lee Pigage

The meeting commenced at 8:00am with a brief introduction and roundtable followed by:

**1. Approval of agenda – Approved**

**2. Program reviews/update [8:15 – 10:30]**

Please see the attached PowerPoint presentations. Highlights and major points for each presentation include:

**Manitoba STEM**  
Michelle Nicolas

Overview of Science, Technology, Energy & Mines (STEM), the Manitoba Geological Survey and the Petroleum Branch. New, current and completed projects, and publications. Please see presentation.

Other comments:

- Martin Fowler commented that Manitoba may want to be involved with the National Atlas 3D model run by the ASC, and include the 3D model of the WCSB.

**Saskatchewan Ministry of Energy and Resources**  
Chris Gilboy

Overview of current staff and their research areas, major geoscience projects/studies and changes in regulations for submission of digital well data. Major activity has been seen with potash, petroleum and coal. The value of crown land sales has risen considerably in 2008. Please see presentation.

Other comments:

- Bakken petroleum and potash are the most active mineral activities in Saskatchewan right now. Potash and oil exploration have been segregated, potash in the south and oil in the north.
- Groundwater demand is expect to increase in Saskatchewan.
- Saskatchewan has seen a substantial increase in land sales in 2008.
- Chris was did not know whether the CO<sub>2</sub> from Buhler was exempt from PST.

**Alberta Geological Survey**  
Ben Hathway

Overview of operation plans (largest budget first):

- Mapping;
- Knowledge management;
- Resource assessment;

- Earth systems;
- Geological hazards; and,
- Groundwater inventory.

Other comments:

- Very little is being done with quaternary mapping in Northern Alberta.
- A large increase in oil and gas exploration funds is expected next year.

### **BC Ministry of Energy and Mines and Petroleum Resources**

Vic Levson

BC is seeing a substantial increase in land sales over 2006-2007, they had \$420 million in land sales last month. ~26% of new activity is in unconventional gas and any shale is being explored in BC. An overview of the main 2008/2009 Geoscience Programs was given as well as what BC is doing to facilitate investment. Please see presentation.

### **Yukon Geological Survey**

Lee Pigage

Overview of:

- Government organizational structure;
- Geological Survey soft rock research;
- Land use planning;
- Pipelines;
- Government initiatives;
- Future projects; and,
- Industry activity.

### **Northwest Territories Geoscience Office**

Adrienne Jones

Overview of the organizational structure and funding in the NWT. The department has been split into groups:

- Minerals and bedrock mapping group
- Petroleum geoscience group
- Resource assessment group
- Geomatics and IT group
- Information Services group
- Outreach group
- NTGO support conferences

Other comments:

- \$1.3 Billion in land sales and work commitments in the Beaufort and McKenzie Basins.
- Work remains to be done with the regulations, this is slowing exploration.

- They are doing resource assessments prior to take over by Protected Areas.
- No work is presently taking place offshore. The land sale was due north of the NWT in an area with a 16km thick sedimentary sequence.

Please see the presentation.

### **National Energy Board**

Jim Davidson  
(Verbal presentation)

Main points:

- The NEB has completed the northern stratigraphic tops datasheet with the GSC, any revisions or additions to Brent.
- Continuing to compile data for the northern resource assessment with “Discovered Resource” session completion in 2009.
- Report on conventional gas in Saskatchewan is due by mid September 2008, the numbers will be reviewed in July.
- Proposed projects – Alberta Unconventional Resources.
- Western Canada Basin project to monitor CO<sub>2</sub> capture and Storage in Western Canada.
- The “PRIMES” methodology with the GSC has room for an inter-jurisdictional group.

### **University of Manitoba, Dept of Geological Sciences**

Nancy Chow

General information on the University of Manitoba facilities, student and faculty research, covering topics such as geophysics of the Williston Basin, Bakken reservoir quality, carbonate sedimentology, petrology and petroleum potential of the Winnipegosis formation. The opportunity exists for governments to work in conjunction with University Professors and students on undergraduate technical reports, Masters or Doctorate Theses. Please see presentation for details.

### **Geological Survey of Canada - Program overview**

Martin Fowler

Overview of:

- Secure Canadian Energy Supply Program ending March 31<sup>st</sup> 2009, it is now in the write up stage.
- SCES Highlights: PRIMES; Resource Assessment methodology and experience transferred to Provincial/territorial partners with 60% contributing to resource assessments; National Coal Inventory Database is now complete; and, 2007-2008 Program.
- PANEC-WCSB. Activity areas & achievements.
- Difficulties included scientific capacity issues and renewal of GEM.
- Future: GEM – need for SCES program to be completed before GEM starts; National Atlas for CO<sub>2</sub> storage capacity; and, Possible “Clean Energy Program”

to cover SCES and other activities not covered by GEM e.g. carbon capture and storage, geothermal, gas hydrates, pipeline / surficial activities.

Other comments:

- Compiled all the information on the previously cancelled geothermal program, this has led to the release of information on sedimentary basins and volcanics.

### **3. Geo-mapping for Energy Minerals Program (GEM) [10:45 – 12:00pm]**

#### **GEM**

Simon Hanmer

(Verbal presentation only)

Geomapping for Energy & Minerals (GEM) is financed for 2 years, but planning is for 5 years. The funding will be:

2008 = \$12 Million

2009 = \$22 Million

2010 = \$22 Million (Inferred funding)

2011 = \$22 Million (Inferred funding)

Of the overall funding, ~10% will go to Human Resources to hire 21-23 research and support staff, ~10% will go to NRCan for taxes and ~10% will go to the Polar Continental Shelf Project (PCSP). Thus, 70% of overall funding will be spent in the Territories and Provinces, 75% of which will be spent in the 3 Territories and 25% in the Provinces on 50:50 cost sharing basis. GEM expects the Provinces will take the lead on formulating possible initiatives. Only the projects with the potential to achieve the GEM outcomes will be considered as the GSC needs to ensure that funding continues both after the 2 year threshold and at the end of the 5 year period.

The provinces need to prioritize ideas and bring them to the table.

Martin Fowler will look after operations for the energy portion and Simon Hanmer after governance.

Projects this year so far:

Yukon project

McKenzie corridor and delta project

Western Arctic island project

Eastern Arctic Island project (Lancaster Sound)

Hudson / Fox Basin project

Uranium project (Charley Jefferson)

Program management project (resources assessment and data management components)

South (waiting for input from most Provinces)

New money is required from the provinces to match the GEM funding; new money and fund matching is not required from the territories.

The western provinces need to get their ideas to the GSC as soon as possible as some other Provinces are ready to go with new money from recent budgets and GEM must make decisions in the very near future. Hanmer advised that Provincial management should confirm all proposals before submitting them, so everything is ready to go April 1, 2009. He also advised talking with Martin Fowler to get a better idea of what projects GEM wants to invest in.

Student training is a fundamental pillar of GEM. Information kits will be sent out to Universities this summer.

Discussion ensued on types of suitable projects, one being Hudson Bay, where they will perform a resource assessment of the basin under the territorial funding portion. GEM will upgrade PRIMES into a Windows-based system. Small scale funding is also possible, such as providing laboratory support on the shale gas study in Manitoba.

#### **4. National Atlas of CO<sub>2</sub> - Geological Storage potential [1:00-2:15 pm]**

##### **CO<sub>2</sub> Geological Storage**

Bill Reynen

The highest emitters in Canada are Alberta and Ontario, they will need nuclear energy and proximal CO<sub>2</sub> storage to meet current emissions standards. Distances greater than 200 km for CO<sub>2</sub> transport is not economical and CO<sub>2</sub> needs 800m depth to keep it in the right form, the biggest storage opportunities are presently in deep saline aquifers. The storage capacity of sedimentary basins close to Ontario and across Canada needs to be reassessed due to issues with current storage capacity estimations. Canada has 68 individual sedimentary basins.

A gap currently exists between our emissions and our target emissions. By 2010 this gap is projected to be 240 Mt of CO<sub>2</sub> equivalent, closing this gap will challenge all market sectors. GHG emission constraints require new approaches:

- Energy Efficiency.
- Fuel Switching.
- Carbon Management - A low-emissions Canadian fossil fuel industry is the ultimate goal, gaining ground in CCS R&D and deployment would be advantageous for the nation.

Main Points:

- CO<sub>2</sub> Capture and storage is expected to play a significant role in GHG mitigation.
- Canada's CCS TRM
- Canada – Alberta CCS task Force
- Canada's CO<sub>2</sub> Storage Capacity Atlas

Please see presentation for details.

## **EERC, Plains CO<sub>2</sub> Reduction Partnership (PCOR)**

Jim Sorensen

Overview of PCOR:

- Program Goals.
- Data – Division Support System (DSS).
- Results of Phase I.
- Phase II & III – Regional characterization Activities.
- Phase III (2007 to 2017).

Please see presentation for details.

### **5. Structural Compilation project for the WCSB [2:15-2:30 pm]**

This study was initiated in late 2000. The following presentations were given:

#### **Alberta Geological Survey (AEUB)**

Dinu Pana

Overview of the methodology behind the lineament study. Journal articles and WCSB Atlas information were scanned and digitized, cross reference with published geophysics, then each lineament was geo-referenced and input into an Access database. This has lead to the development of an interactive Arcview GIS project. In 2004 the Fault Compilation Subcommittee of the WCSB Working Group was formed with representatives from Alberta, British Columbia, Saskatchewan, Manitoba, the GSC and the C.S. Lord Northern Geoscience Centre.

The original lineaments have been confirmed using geophysical data, the first derivative of the Total Magnetic field was processed to get a vertical angle shadowgram. Lineaments were then interpreted from this.

Please see presentation for details.

#### **Saskatchewan Ministry of Energy and Resources (Petroleum)**

Chris Gilboy

Overview of what lineaments in Saskatchewan have been mapped and digitized and what remains to be done. Please see presentation for details.

#### **Manitoba STEM**

Jim Bamburak

Manitoba is in the process of finalizing their lineament data, and plan to add it to the Alberta model in October 2008.

## **Discussion on Lineament study**

The industry response to this lineament study ranges from hits on the web page, to client calls on a regular basis. A derivative product has been the eight character cross basin code for correlation of the Yukon stratigraphy. It was commented that the position of lineaments is very important to resource plays and galena has been found along a lineament above the projected Great Slave Lake Zone indicating relatively recent movements and lead mineralization.

### **6. Working Group Website**

#### **Website**

A. Jones

- All meeting participants were asked to send any corrections, additions or pictures to Adrienne Jones.
- Representatives are needed from the USGS, North Dakota and Montana. Chris Gilboy volunteered to find out who to contact in Montana, as the call for this meeting was met with no response.
- The agenda for the 2000 meeting is missing, if anyone has a copy please forward it.
- Contact Adrienne if you need a high resolution image of the logo, otherwise just copy from the webpage.

Suggested additions to the website included:

1. Western Canada Sedimentary basin 3D model.
2. Links to the GEM project and the Structural Compilation project.
3. Maps from the EERC.
4. Add an associate member section to PCORE.
5. Add a list of University projects being conducted on the WCSB.
6. Details on projects going on in each jurisdiction.

### **7. Discussion and Conclusions**

The Government Pavilion at CSPG worked very well, it increased the traffic at the booths, and Michelle Nicolas would like to see it continue.

Discussion about taking the WCSB group up to a national forum and incorporating it into the NGSC. Concern was voiced over a previous attempt to involve the eastern provinces, which failed. However, integration of some of our members into the NGSC may be a worthwhile and productive use of our time. This forum may be useful for promoting cross boundary stratigraphic mapping, but this may prove to be a lot of work as the western provinces still have not developed a singular western Canadian stratigraphy, and Peter Devenport (GSC – Calgary), has attempted to do something similar. Ric Syme commented the NGSC wants an energy representative for each jurisdiction on its committee.

James Sorensen iterated his support of the lineaments project and commented that the US geological surveys are also difficult to coordinate and the WCSB meeting is a model of how geological surveys can collaborate and work together. It was felt the GSC presence is critical to the group, to accomplish goals far larger than the individual provinces / territories could on their own. The established cross border relationships have been very effective and underscored the need to not isolate ourselves from other jurisdictions.

Many issues, such as a lack of in-house expertise, is shared between the provinces and the territories, there is a need to keep the lines of communication open in order to help each other. The annual general meeting is our main forum, however, we should also try to raise the exposure of the group. One way of doing this may be to submit core from each province/territory to the annual CSPG core workshop in a “WCSB hot plays” section. Each province/territory would submit core from their most successful play so we could all learn from it and apply it to our own areas.

Consultation across country is needed to determine the support for compiling the geothermal data, multi-jurisdictional proposals would be preferred.

Outreach is needed to political superiors, exhibiting that the surveys are doing something useful, and to school teachers. It was felt that the majority of school teachers are anti-earth sciences by background, usually they have an Arts background, and that more should be done to teach the children about earth sciences and its importance in and to society.

No fieldtrips were offered in Manitoba at this meeting, the general consensus was there should be one at the next meeting.

The chapter on Industrial Minerals in the Western Canada Sedimentary Basin Atlas should have a subcommittee. A subcommittee is needed to compile present producers, resources, etc..., it used to meet nationally, but not for a number of years. Conflicting views aired on whether this should be composed of managers or more technical staff.

It was proposed that riding on the success / usefulness on a representative from the local University being present at this meeting, future meetings should incorporate a representative from the local university.

Discussion about having industry present at this meeting concluded a keynote speaker at the beginning of the day may be the most manageable. It was commented that many of the issues discussed at this meeting did not have a direct industry role, but that it would be valuable to hear their perspective and to interface with industry to validate the need for funding, an industry day was proposed. Provinces such as BC have a Technical Advisory Committee (TAC) that interfaces with industry and monitors funding.

Discussion on having more technical presentations at the next WCSB meeting. Overview talks are good, but more technical information (i.e. overview of major projects) would be

helpful for finding areas of common interest between the jurisdictions. However, adding this to the meeting would make the meeting last two days instead of one.

**Next meeting:** British Columbia offered to host the next meeting in Victoria, BC, with the date to be determined.

The meeting was concluded at 4:45.

## **Business resulting from the meeting**

### **Action Items**

1. MB may want to be involved with the National Atlas 3D model run by the GSC, and include the 3D model of the TGI project area and the WCSB.
2. There is a need to address the loss in personnel in government. A lack of geological personnel due to retirements and loss to industry was noted in all departments except Saskatchewan (John Ketchum made the comment that there has been a 20% loss in personnel as civil servants are not being paid enough.)
3. Provinces should submit any GEM proposals as soon as possible.
4. Please submit any pictures, additional website content or links to Adrienne Jones.
5. Chris Gilbooy to contact the North Dakota, the Montana Geological Survey and the USGS for any parties interested in joining our group.
6. Michelle Nicolas was to find out whether the Western Canada Sedimentary basin 3D model could be used on the website.
7. James Sorensen to submit maps from the EERC for the webpage
8. Contact Peter Davenport and determine what Canada has done to develop a singular stratigraphy.
9. Set up and submit core for the annual CSPG core workshop in a “WCSB hot plays” section.
10. Arrange field trip for the next WCSB meeting.
11. Outreach to School teachers – promote a general earth sciences course during their training?
12. Nominate someone to arrange a subgroup for the industrial minerals chapter of the Western Canada Sedimentary basin Atlas.
13. Add webpage / links on the webpage to university projects related to the Western Canada Sedimentary Basin.
14. BC to arrange an Industry Keynote speaker for the next meeting.
15. Technical talks discussing major projects and their goals for each jurisdiction at future meetings?
16. Michelle Nicolas to get WCSB-related project list from Manitoba universities to add to working group website. Each jurisdiction should do the same.
17. Suggested to add link to the working group website on the all member websites.
18. Industry day?
19. Date and venue for the next meeting?

### **2009 Agenda items**

1. Political outreach – we need to exhibit our usefulness. Invite a politician to the next meeting?
2. Staff retention and acquisition strategies.
3. Field trip.