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2008 JUN 12 A 11:16

NEB/ONE

TALISMAN ENERGY INC.
SUITE 3400, 888 3RD STREET S.W.
CALGARY, ALBERTA T2P 5C5
FAX (403) 237-1902
TEL (403) 237-1234
www.talisman-energy.com

TALISMAN ENERGY INC. GEOPHYSICAL OPERATIONS SUBMISSION – JUNE 10, 2008

Please find enclosed seven reports from Talisman Energy Inc., Devon Canada, and EXPLOR concerning geophysical and geological operations relating to Exploration Licenses in the Deline District, Sahtu Settlement Area, NWT.

The Talisman Energy reports concern seismic and geochemical surface sampling operations in 2007. The seismic report includes data interpretation that merges the 2007 seismic program with data from the EXPLOR operated 2006 program.

EXPLOR's report concerns the 2006 seismic program, but does not include any interpretation products. Those are found in the merged products found in Talisman's report.

Devon Canada's reports concern a series of gravity data acquisition programs operated by Excel Geophysics, done in three stages.

GOA number	Work Programme	Comments
Talisman		
9224-T077-001E	GBP Vibroseis programme	Report completed - 2007 data interpretation merged with EXPLOR's 2006 program
9233-T077-002E	GBP Gore Geochemistry	Report completed - prepared for Talisman by GORE
9233-T077-001E	Colville Gore Geochemistry	Report completed - prepared for Talisman by GORE
Devon		
9228-D031-001E	Gravity Survey - Fall 2005	Report completed - prepared for Devon by Excel Geophysics
9228-E034-001E	Gravity Survey - Winter 2006	Report completed - prepared for Devon by Excel Geophysics
9222-D072-001E	Gravity survey - Summer 2006	Report completed - prepared for Devon by Excel Geophysics
Explor		
9229-E034-013E	Deline District 2D seismic	Report completed - prepared by EXPLOR, data merged with Talisman 2007 data interpretation

GEOLOGICAL OPERATION AUTHORIZATION OPERATION IDENTIFIER
NUMBER: **9233-T077-002E**

TALISMAN ENERGY INC.
2007 GEOCHEMICAL SURVEY
FINAL REPORT
GREAT BEAR PLAINS AREA
D'ELINE DISTRICT
SAHTU SETTLEMENT AREA, NWT

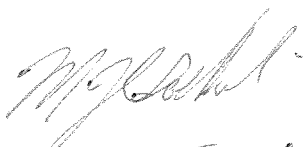
GEOGRAPHICAL AREA: GREAT BEAR PLAINS (EXPLORATION LICENSE 437
AND LOSH LAKE G-22, LONG. 123.330925 W/LAT.
65.855178 N NAD 83 DATUM) AREA AND TWEED
LAKE (TWEED LAKE M-47, LONG. 125.904447
W/LAT. 66.946274 N NAD 83 DATUM), COLVILLE
HILLS, SAHTU SETTLEMENT AREA, NWT

CONTRACTOR: W.L. GORE & ASSOCIATES, INC.
100 CHESAPEAKE BOULEVARD, P.O. BOX 10
ELKTON, MARYLAND 21922-0010
UNITED STATES OF AMERICA

INTEREST OWNERS: TALISMAN ENERGY INC. & DEVON CANADA CORP

SUBMITTED BY W.L. GORE & ASSOCIATES INC. AND TALISMAN ENERGY
INC.

30 APRIL 2008


MARK J. CUDLEWSKI
P. GEORH P. GEOL



File 9233-T077-002E
23 January 2007

Bob Potter
Team Leader
Talisman Energy Inc.
Suite 3400, 888 3rd Stret SW
Calgary, AB T2P 5C5
Facsimile (403) 237-1234

Dear Mr. Potter:

**Talisman Energy Inc. 2007 Geochemical Survey, Great Bear Plains Area of
the Déline District in the Sahtu Settlement Area, NT**

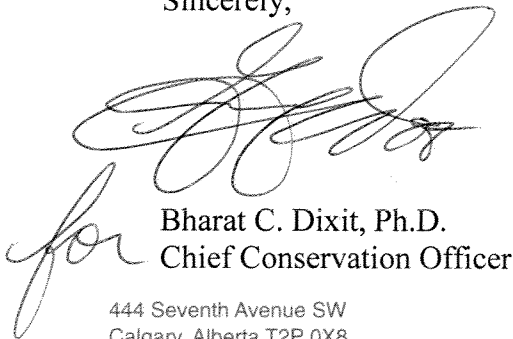
Please find attached a Geological Operation Authorization and the terms and conditions for the subject program. Please note that Operation Identifier No. **9233-T077-002E** has been assigned to this operation and should be quoted on all future correspondence.

Talisman Energy Inc., as the operator, is responsible for conducting this operation in accordance with the applicable legislation and this authorization. You are strongly encouraged to ensure that you and your contractors are aware of the terms and conditions of approval.

Please note that the NEB requires ample notice of start-up so that an inspector may be dispatched to view operations. On-site inspections may be undertaken by NEB Safety and Conservation Officers and you may be asked for assistance in providing transportation to the site. The inspector may wish to attend the start-up/safety meeting. Copies of minutes of start-up/safety meetings shall be provided to the NEB. These minutes should include subjects covered as well as personnel present.

Several report forms and information pages are attached for your information and use.

Sincerely,


for Bharat C. Dixit, Ph.D.
Chief Conservation Officer

444 Seventh Avenue SW
Calgary, Alberta T2P 0X8

444, Septième Avenue S.-O.
Calgary (Alberta) T2P 0X8



Telephone/Téléphone : (403) 292-4800
Facsimile/Télocopieur : (403) 292-5503
<http://www.neb-one.gc.ca>
Telephone/Téléphone : 1-800-899-1265
Facsimile/Télocopieur : 1-877-288-8803

/jek.

Encl: Geological Operation Authorization
Terms and Conditions
NT-NU Spill Report Form and Guidance
NEB Contact List
Weekly Progress Report Form
Canada Labour Code - Part XVI Information
Hazardous Occurrence Investigation Report Form



GEOLOGICAL OPERATION AUTHORIZATION

Applicant: Talisman Energy Inc.
Operating Licence No.: 1157 Land Use Permit / Water License No.: S06B-010 (IN REFERRAL)
Geographical Area: Great Bear Plains, Northwest Territories (Deline District)
Grids or NTS Map Sheets: 96G
Interest Identifier: Exploration Licence 436 & 437
Description of Operation: Geochemical Field Survey

SPECIFICS OF OPERATION

Exclusive ☒ Purchase ☐ Non-Exclusive ☐ Participation ☐
Proposed Commencement Date: 19/01/2007 Proposed Completion Date: 02/02/2007
No. of Personnel: 2 No. of Crews: 1
Vessel / Aircraft Names / Registration Numbers: _____

OPERATIONAL CONTACT

Name: Bob Potter, Team Leader, Nwt
Address: Suite 3400, 888 - 3 Street S.W. Calgary, Alberta T2P 5C5
Telephone: (403)237-4672 Facsimile: (403)693-2591

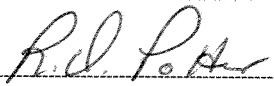
ESTIMATED EXPENDITURES

	On-Interest	Off-Interest
Field Work:	<u>\$65500.00</u>	<u>\$</u>
Interpretation / Laboratory:	<u>\$215500.00</u>	<u>\$</u>

CONTRACTORS

Data Acquisition: W. L. Gore & Associates / Peregrine Ventures Inc.
Data Interpretation / Laboratory Studies: Yes

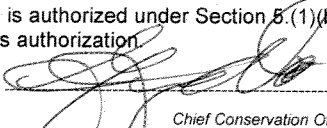
"I certify that I have complied with the notification, permitting and / or licencing requirements of all federal / territorial legislation that are applicable to this operation".

Signed:  Date: Dec 22, 2006
Responsible Officer

Name: Bob Potter Operator: Talisman Energy Inc.
Title: Team Leader, Nwt Telephone: (403)237-4672

NEB USE ONLY

This operation is authorized under Section 8.1(1)(b) of the *Canada Oil and Gas Operations Act* (O-7) and is subject to the terms and conditions attached to this authorization.

Signed:  Date: January 23, 2007
Chief Conservation Officer

Operation Identifier: 9233-FO77-002E Number of Attachments: _____

Terms and conditions of the approval are as stated below:

1. Unless otherwise directed by the Chief Conservation Officer, the operator shall implement or cause to be implemented all the policies, practices, mitigative measures, recommendations and procedures for the protection of the environment included in or referred to in the operator's application and the 2007 Geophysical Operations Authorization for a 2D seismic program.
2. The operator shall, within 30 days of the completion of the geological survey, file with the Chief Conservation Officer, a confirmation, by an officer of the company, that the approved Project was completed in compliance with all applicable conditions in the Geological Operation Authorization. If compliance with any of these conditions cannot be confirmed, the officer of the company shall file with the Chief Conservation Officer details as to why compliance cannot be confirmed.
3. The NEB shall be notified upon commencement and termination of activities.
4. The operator shall notify the NEB, by the most expedient communication means available, of any major incidents, accidents or any lost time occurrences. Any changes or updates in field contacts or Journey Management procedures in the Emergency Response Plan are to be conveyed to the NEB as soon as the changes or updates are made. Telephone numbers are provided on the attached NEB contact list.
5. The operation is to be conducted in a manner consistent with the requirements of the *Canada Labour Code Part II* and the *Oil and Gas Occupational Safety and Health Regulations*.
6. Weekly status reports, with the **Operation Identification No.** in the subject line, are to be emailed to dailyreports@neb-one.gc.ca or faxed to the attention of the Chief Conservation Officer (fax number (403) 292-5876) by Monday 8:30 am. Please contact Lori-Ann Sharp (telephone (403) 299-1994) should there be any difficulty in delivery of the weekly status reports.
7. A final report, including one (1) copy of the written report and any maps generated, and one (1) electronic copy (pdf-portable document format) is required **within twelve (12) months** following termination of field work.



Canada

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE

TEL: (867) 920-8130

FAX: (867) 873-6924

EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH – DAY – YEAR		REPORT TIME		☐ ORIGINAL SPILL REPORT, OR ☐ UPDATE # _____ TO THE ORIGINAL SPILL REPORT	REPORT NUMBER _____
	B OCCURRENCE DATE: MONTH – DAY – YEAR		B OCCURRENCE TIME			
C	LAND USE PERMIT NUMBER (IF APPLICABLE)			WATER LICENCE NUMBER (IF APPLICABLE)		
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION			REGION		
				☐ NWT ☐ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN		
E	LATITUDE			LONGITUDE		
	DEGREES	MINUTES	SECONDS	DEGREES	MINUTES	SECONDS
F	RESPONSIBLE PARTY OR VESSEL NAME		RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION			
G	ANY CONTRACTOR INVOLVED		CONTRACTOR ADDRESS OR OFFICE LOCATION			
H	PRODUCT SPILLED		QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES		U.N. NUMBER	
	SECOND PRODUCT SPILLED (IF APPLICABLE)		QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES		U.N. NUMBER	
I	SPILL SOURCE		SPILL CAUSE		AREA OF CONTAMINATION IN SQUARE METRES	
J	FACTORS AFFECTING SPILL OR RECOVERY		DESCRIBE ANY ASSISTANCE REQUIRED		HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT	
K	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS					
L	REPORTED TO SPILL LINE BY	POSITION	EMPLOYER	LOCATION CALLING FROM	TELEPHONE	
M	ANY ALTERNATE CONTACT	POSITION	EMPLOYER	ALTERNATE CONTACT LOCATION	ALTERNATE TELEPHONE	
REPORT LINE USE ONLY						
N	RECEIVED AT SPILL LINE BY	POSITION STATION OPERATOR	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8130	
LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC			SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN		FILE STATUS ☐ OPEN ☐ CLOSED	
AGENCY		CONTACT NAME	CONTACT TIME	REMARKS		
LEAD AGENCY						
FIRST SUPPORT AGENCY						
SECOND SUPPORT AGENCY						
THIRD SUPPORT AGENCY						

Instructions for Completing the NT-NU Spill Report Form

This form can be filled out electronically and faxed to the spill line at 867-873-6924. Commencing on January 2, 2007, the form can also be e-mailed as an attachment to spills@gov.nt.ca. Until further notice, please verify receipt of e-mail transmissions with a follow-up telephone call. Spills can still be phoned in by calling collect at 867-920-8130.

A. Report Date/Time	The actual date and time that the spill was reported to the spill line. If the spill is phoned in, the Spill Line will fill this out. Please do not fill in the Report Number: the spill line will assign a number after the spill is reported.
B. Occurrence Date/Time	Indicate, to the best of your knowledge, the exact date and time that the spill occurred. Not to be confused with the report date and time (see above).
C. Land Use Permit Number /Water Licence Number	This only needs to be filled in if the activity has been licenced by the Nunavut Water Board and/or if a Land Use Permit has been issued. Applies primarily to mines and mineral exploration sites.
D. Geographic Place Name	In most cases, this will be the name of the city or town in which the spill occurred. For remote locations – outside of human habitations – identify the most prominent geographic feature, such as a lake or mountain and/or the distance and direction from the nearest population center. You must include the geographic coordinates (Refer to Section E).
E. Geographic Coordinates	This only needs to be filled out if the spill occurred outside of an established community such as a mine site. Please note that the location should be stated in degrees, minutes and seconds of Latitude and Longitude.
F. Responsible Party Or Vessel Name	This is the person who was in management/control/ownership of the substance at the time that it was spilled. In the case of a spill from a ship/vessel, include the name of the ship/vessel. Please include full address, telephone number and e-mail. Use box K if there is insufficient space. Please note that, the owner of the spilled substance is ultimately responsible for any spills of that substance, regardless of who may have actually caused the spill.
G. Contractor involved?	Were there any other parties/contractors involved? An example would be a construction company who is undertaking work on behalf of the owner of the spilled substance and who may have contributed to, or directly caused the spill and/or is responding to the spill.
H. Product Spilled	Identify the product spilled; most commonly, it is gasoline, diesel fuel or sewage. For other substances, avoid trade names. Wherever possible, use the chemical name of the substance and further, identify the product using the four digit UN number (eg: UN1203 for gasoline; UN1202 for diesel fuel; UN1863 for Jet A & B)
I. Spill Source	Identify the source of the spill: truck, ship, home heating fuel tank and, if known, the cause (eg: fuel tank overfill, leaking tank; ship ran aground; traffic accident, vandalism, storm, etc.). Provide an estimate of the extent of the contaminated/impacted area (eg: 10 m ²)
J. Factors Affecting Spill	Any factors which might make it difficult to clean up the spill: rough terrain, bad weather, remote location, lack of equipment. Do you require advice and/or assistance with the cleanup operation? Identify any hazards to persons, property or equipment: for example, a gasoline spill beside a daycare centre would pose a safety hazard to children. Use box K if there is insufficient space.
K. Additional Information	Provide any additional, pertinent details about the spill, such as any peculiar/unique hazards associated with the spilled material. State what action is being taken towards cleaning up the spill; disposal of spilled material; notification of affected parties. If necessary, append additional sheets to the spill report. Number the pages in the same format found in the lower right hand corner of the spill form: eg. "Page 1 of 2", "Page 2 of 2" etc. Please number the pages to ensure that recipients can be certain that they received all pertinent documents. If only the spill report form was filled out, number the form as "Page 1 of 1".
L. Reported to Spill Line by	Include your full name, employer, contact number and the location from which you are reporting the spill. Use box K if there is insufficient space.
M. Alternate Contact	Identify any alternate contacts. This information assists regulatory agencies to obtain additional information if they cannot reach the individual who reported the spill.
N. Report Line Use Only	Leave Blank. This box is for the Spill Line's use only.



NEB Contacts for COGO Act-regulated Work or Activities

INCIDENT PHONE NUMBERS * Hazardous occurrences (under Part XVI of the <i>Canada Oil and Gas Occupational Safety and Health Regulations</i>) and incidents requiring medical evacuation are to be reported to the NEB immediately.		NEB 24-hour Incident Cell: (403) 807-9473 NWT/Nunavut Spill Line Phone: (867) 920-8130 NWT/Nunavut Spill Line Fax: (867) 873-6924 Transportation Safety Board Hotline: (819) 997-7887
NEB Operations Staff	Internet	Telephone Numbers
Rick Turner Operations Specialist Safety & Conservation Officer	rturner@neb-one.gc.ca	Work: (403) 299-3868 Cell: (403) 540-3754 Home: (403) 257-0840
Chris Knoechel Petroleum Engineering Specialist Safety & Conservation Officer	cknoechel@neb-one.gc.ca	Work: (403) 299-3866 Cell: Home: (403) 241-0047
Environment and Spill Reporting	Internet	Telephone Numbers
John Korec Environmental Specialist Conservation Officer	jkorec@neb-one.gc.ca	Work: (403) 292-6614 Cell: (403) 818-2403 Home: (403) 275-6256
Anne-Marie Buchwald Environmental Specialist	abuchwald@neb-one.gc.ca	Work: (403) 292-4931 Cell: Home: (403) 366-9899
Pam Romanchuk Environmental Specialist	promanchuk@neb-one.gc.ca	Work: (403) 299-3906 Cell: Home: (403) 253-3128
Chief Conservation & Safety Officers	Internet	Telephone Numbers
Bharat Dixit Exploration and Production, Team Leader Chief Conservation Officer	bdixit@neb-one.gc.ca	Work: (403) 299-2792 Cell: (403) 617-3887 Home: (403) 239-1093
Alan Murray Professional Leader, Engineering Chief Safety Officer	amurray@neb-one.gc.ca	Work: (403) 299-3903 Cell: (403) 815-6661 Home: (403) 282-5637
NEB OPERATIONS PHONE NUMBERS	Main Office: (403) 292-4800 Operations Fax: (403) 292-5876 Alternate Fax: (403) 292-5875	

WEEKLY PROGRESS REPORT

PROGRAM NAME: _____ PERIOD _____ TO _____

APPROVALS

	NATIONAL ENERGY BOARD	INDIAN & NORTHERN AFFAIRS CANADA		SAHTU LAND & WATER BOARD
OPERATION ID#				
EXP. DATE				

COMPANY NAME: _____

SEISMIC CONTRACTOR: _____

AUTHORIZED PROGRAM PARAMETERS

ALTERATION OR MODIFICATION OF THE APPROVED PARAMETERS REQUIRES APPROVAL FROM APPROPRIATE REGULATORY AGENCY

TOTAL # OF 2D Km APPROVED		3D SIZE KM SQ APPROVED		SOURCE TYPE	
TOTAL # OF LINES 2D APPROVED		NUMBER 3D SOURCE LINES		CHARGE SIZE/# VIBS	
RECEIVER WIDTH		3D SOURCE Km		SHOT HOLE DEPTH (m)	
SOURCE WIDTH		NUMBER 3D REC. LINES		CAP LEAD LENGTH (m)	
		3D RECEIVER Km		CAP LEAD LENGTH ABOVE GROUND (m)	

UNDETONATED CHARGES:	
LOCATION: (NAD 27)	
REASON:	

INSPECTIONS: (INAC, NEB, ILA, DFO)	
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OPERATIONAL ISSUES:	

SUMMARY OF INCIDENTS: (eg: fuel spills, vehicles breaking through ice)	

GENERAL COMMENTS:	

LAT. / LONG. STAGING AREAS	
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LAT. / LONG. CAMP LOCATIONS	
------------------------------------	--

DATE SUBMITTED TO:	INAC		NEB			
	For Sahtu >>	descenes@inac.gc.ca		dailyreport@neb-one.gc.ca		

PARTY MANAGER: _____

FIELD FAX _____

FIELD PHONE# _____

FIELD E-MAIL _____

ACTIVITY DURING REPORTING PERIOD

[illegible]

* TO ADD ADDITIONAL COLUMNS AND ROWS, COPY CELLS FROM THIS PAGE TO CREATE AN ADDITIONAL PAGE WITH FORMATED CELLS

CANADA LABOUR CODE

Oil and Gas Occupational Safety and Health Regulations

PART XVI

HAZARDOUS OCCURRENCE INVESTIGATION, RECORDING AND REPORTING

[SOR/94-165, s. 59(F)]

Interpretation

16.1 In this Part,

"disabling injury" means an employment injury or an occupational disease that

- (a) prevents an employee from reporting for work or from effectively performing all the duties connected with the employee's regular work on any day subsequent to the day on which the disabling injury occurred, whether or not that subsequent day is a working day for that employee,
- (b) results in the loss by an employee of a body member or part thereof or in the complete loss of the usefulness of a body member or part thereof, or
- (c) results in the permanent impairment of a body function of an employee;

"minor injury" means an employment injury or an occupational disease for which medical treatment is provided and excludes a disabling injury. (blessure légère) SOR/94-165, s. 60.

Report by Employee

16.2 Where an employee becomes aware of an accident or other occurrence arising in the course of or in connection with his work that has caused injury to him or to any other person, he shall without delay report the accident or other occurrence to his employer, orally or in writing.

Investigation

16.3 (1) Where an employer is aware of an accident, occupational disease or other hazardous occurrence affecting any of his employees in the course of employment, the employer shall, without delay,

- (a) take necessary measures to prevent a recurrence of the hazardous occurrence;
 - (b) appoint a qualified person to carry out an investigation of the hazardous occurrence; and
 - (c) notify the safety and health committee or the safety and health representative, if either exists, of the hazardous occurrence and of the name of the person appointed to investigate it.
- (2) In addition to the investigation referred to in paragraph (1)(b), where the hazardous occurrence referred to in subsection (1) is an accident involving a ship or aircraft or a motor vehicle on a public road, the employer shall investigate the accident by obtaining from the appropriate police or other investigating authority a copy of the report made by that authority in respect of the accident.

(3) As soon as possible after receipt of the report referred to in subsection (2), the employer shall provide a copy thereof to the safety and health committee or the safety and health representative, if either exists. SOR/94-165, s. 61.

Hazardous Occurrence Report

[SOR/94-165, s. 62(F)]

16.4 (1) The employer shall report, by the most rapid means of communication available to the employer, the date, time, location and nature of any accident, occupational disease or other hazardous occurrence referred to in section 16.3 to a safety officer and to the safety and health committee or the safety and health representative, if either exists, as soon as possible but not later than 24 hours after becoming aware of the occurrence, where the occurrence resulted in one of the following circumstances:

- (a) the death of an employee;
- (b) a missing person;
- (c) a disabling injury to an employee;
- (d) the implementation of emergency rescue, revival or evacuation procedures;
- (e) a fire or explosion that threatened the safety or health of an employee;
- (f) the free fall of an elevating device that rendered the elevating device unsafe for use by an employee;
- (g) an accidental accumulation, spill or leak of a hazardous substance; or
- (h) the loss of or damage to support craft.

(2) A written report of the accident, occupational disease or other hazardous occurrence referred to in subsection (1) shall be submitted by the employer within 14 days after the occurrence to

- (a) the regional safety officer at the regional office; and
- (b) the safety and health committee or the safety and health representative, if either exists.

(3) The report referred to in subsection (2) shall be in the form set out in Schedule I to this Part and contain the information required by the form. SOR/88-199, s. 19; SOR/94-165, s. 63.

16.5 Where an investigation referred to in subsection 16.3(2) discloses that the accident resulted in a circumstance referred to in subsection 16.4(1), the employer shall, within 14 days after the receipt of the report of the accident made by the police or other investigating authority, submit a copy of the report to the regional safety officer at the regional office.

Minor Injury Record

16.6 (1) Every employer shall keep a record of each minor injury of which he is aware that affected any of his employees in the course of employment.

(2) A record made pursuant to subsection (1) shall contain

(a) the date, time and location of the occurrence that resulted in the minor injury;

(b) the name of the injured or ill employee;

(c) a brief description of the minor injury; and

(d) the causes of the minor injury.



Gouvernement du Canada
Government of Canada

SCHEDULE 1 / ANNEXE 1
(subsection 16.4(3) / paragraphe 16.4(3))

HAZARDOUS OCCURRENCE INVESTIGATION
REPORT

RAPPORT D'ENQUÊTE DE
SITUATION COMPORTANT DES RISQUES

1. Type of Occurrence / Genre de situation ☐ Explosion ☐ Loss of consciousness / Perte de conscience ☐ Disabling injury / Blessure invalidante ☐ Emergency procedure / Procédure d'urgence ☐ Other (specify) / Autre (préciser) _____		2. Department file no. / N° de dossier du ministère Regional or district Office / Bureau régional ou de district Employer ID no. / Numéro d'identification de l'employeur	
3. Employer name and mailing address / Nom et adresse postale de l'employeur		Postal code / Code postal	
		Telephone number / Numéro de téléphone	
Site of hazardous occurrence / Lieu de la situation comportant des risques		Date and time of hazardous occurrence / Date et heure de la situation comportant des risques	
		Weather / Conditions météorologiques	
Witnesses / Témoins		Supervisor's name / Nom du surveillant	
		Operator / Exploitant	
Identification of drilling rig, drilling unit, production facility or support craft / Identification de l'appareil de forage, installation de forage, installation de production ou du véhicule de service			
4. Description of what happened / Description des événements			
Brief description and estimated cost of property damage / Description sommaire et coût estimatif des dommages matériels		Operation in progress / Opération en cours	
5. Injured employee's name (if applicable) / Nom de l'employé blessé (s'il y a lieu)		Age / Âge	Sex / Sexe
Occupation / Profession		Years of experience in occupation / Nombre d'années d'expérience dans la profession	
Description of injury / Description de la blessure			
Was training in accident prevention given to injured employee in relation to duties performed at the time of the hazardous occurrence? / L'employé blessé a-t-il reçu une formation en prévention des accidents relativement aux fonctions qu'il exerçait au moment de la situation comportant des risques? ☐ Yes ☐ No Specify Oui Non Préciser			
6. Direct causes of hazardous occurrence / Causes directes de la situation hasardeuse			
7. Corrective measures and date employer will implement / Mesures correctives qui seront appliquées par l'employeur et date d'entrée en vigueur Reasons for not taking corrective measures / Raisons pour lesquelles aucune mesure corrective n'a été prise Supplementary preventative measures / Mesures supplémentaires de prévention			
8. Name of person investigating / Nom de la personne menant l'enquête		Signature	Date
Title / Titre		Telephone number / Numéro de téléphone	
9. Safety & Health committee's or representative's comments / Observations du comité de sécurité et de santé ou du représentant en matière de sécurité et de santé			
Committee member's or representative's name / Nom du membre du comité ou du représentant		Signature	Date
Title / Titre		Telephone number / Numéro de téléphone	

Lab / Trav 369 (O&G) (rev. 93/02)

COPIES TO: Safety Officer, Safety and Health Committee or Representative, Employer

COPIES À : l'agent de sécurité, le comité de sécurité et de santé ou le représentant en matière de sécurité et de santé, l'employeur



**GORETM Survey for Exploration
FINAL REPORT**

**GREAT BEAR PLAINS SURVEY AREA
NORTHWEST TERRITORIES, CANADA**

Order No. 12045661

17th August 2007

**Prepared For:
TALISMAN ENERGY INC.
Suite 3400, 888 3rd Street S.W.
Calgary, Alberta T2P 5C5
CANADA**

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REPORT of FINDINGS
GORE™ Survey for Exploration

GREAT BEAR PLAINS SURVEY
NWT, CANADA

Gore Production Order No. 12045661

Conducted For:
TALISMAN ENERGY INC.
Suite 3400, 888 3rd Street S.W.
Calgary, Alberta T2P 5C5
CANADA

PREPARED BY:

DATE:

Paul A. Harrington, B.Sc.
Senior Geologist

17th August 2007

REVIEWED BY:

DATE:

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EXECUTIVE SUMMARY

TALISMAN ENERGY INC. (TALISMAN) contracted W. L. GORE & ASSOCIATES (GORE) to conduct a GORE™ Survey for Exploration over an area identified as Great Bear Plains (Exploration License 437) in the Northwest Territories in Canada. The survey area was located in the Great Bear Basin, a shallow Cretaceous basin overlaying lower Paleozoic strata. The location of the EL 437 survey area and the Colville Hills model template are shown on a satellite image in Figure 1. The Cambrian Mount Clark formation was the target sandstone reservoir for this area.

The primary purpose of the surface geochemical survey was to determine the probability of significant hydrocarbon accumulations structurally trapped in the Cambrian Mount Clark formation on Exploration License 437 in the Great Bear Plains area of the Northwest Territories of Canada based on modeled accumulations in the Colville Hills area.

GORE contracted PEREGRINE VENTURES INC. (PEREGRINE) to perform all field activities related to the sample installation and retrieval. TALISMAN arrange for all field support including snowmobiles, helicopter, fuel, lodging, meals and local helpers. Field documentation provided by PEREGRINE is provided in Appendix C. The PEREGRINE field teams installed GORE Module passive soil gas samplers on three hundred thirty four (334) grid locations in the survey area and eighteen (18) samplers along a transect in Colville Hills area. In addition to the grid samples, PEREGRINE installed forty four (44) geochemical samples at the three model well sites. Model sites, model objective, location coordinates and relevant comments are summarized below. Additional background information provided by TALISMAN appears in Appendix D, “Customer-Supplied Information”.

Model ID	Longitude*	Latitude*	Model Objective	Model Comments
Tweed Lake M47	125.904447 W	66.946274 N	GAS	Tested 5.5 mmcfd and 624 bcpd from Mt. Clark formation, Depth 1221-1236 meters, not under production
Tweed Lake C12	126.053403 W	67.017077 N	DRY	Drilled and abandoned, slight gas shows
Losh Lake	123.330925 W	65.855178 N	DRY	Drilled and abandoned, no gas shows

* NAD 83 Datum

Preprocessing of raw chemical output for all sample classes indicated the samples had acquired valid field signal, unrelated to sampler manufacturing, field transit or laboratory analytical conditions and the data were therefore fit for use in evaluating hydrocarbon prospectivity in the Great Bear Plains survey area.

For this project, both a “supervised” and an “unsupervised” modeling approach was adopted using a variety of statistical methods.

The following models were developed:

Tweed Lake M47 Gas Model

All samples from the Tweed Lake M47 gas well were used to define the general character of gas reservoir emanation at the surface. Similarly, all samples from the Tweed Lake C12 and Losh Lake dry wells were used to define “background” emanation character.

Cluster 13 Gas Model

The signature for Cluster 13 consisted primarily of light aliphatic hydrocarbons in the C₂ to C₇ range and therefore all samples from Cluster 13 were used to define the general character of gas emanation at the surface. Fourteen samples from the Losh Lake dry well were used to define “background” emanation character.

Cluster 7 Gas Model

The signature for Cluster 7 consisted primarily of light aliphatic hydrocarbons in the C₂ to C₆ range plus normal alkanes in the C₉ to C₁₅ range similar to those found at the Tweed Lake M47 well. Therefore all samples from Cluster 7 were used to define the general character of gas/condensate emanation at the surface. Fourteen samples from the Losh Lake dry well were used to define “background” emanation character.

Combined Clusters 7 and 13 Gas Model

All samples from Clusters 7 and 13 were used to define the general character of gas emanation at the surface. Fourteen samples from the Losh Lake dry well were used to define “background” emanation character.

The model was developed using the end-member sample sets to collectively define their respective “gas-like” and “background-like” emanation signatures in two-way discriminant analysis. This process produces a statistical separation of the end members, defining which principal component factors best discriminate or separate the centroids of the defined classes.

The results for the Tweed lake M47 gas-like model in Colville Hills identified a geochemical feature at least 3.5 kilometers long along the transect over the Tweed Lake field. The geochemical feature truncates along the transect 1.5 kilometers northeast of the Tweed Lake M47 gas well and appears to closely correlate with the Mt. Clark reservoir for Tweed Lake. In addition this model identified several potential large geochemical features in the EL 437 survey area which is located two hundred kilometers to the southeast.

The results for the various Cluster gas-like models detected several geochemical features which correspond with the geochemical features for the Tweed Lake M47 gas-like model. This correlation is understandable since the signatures of the Cluster 7 samples and Tweed Lake M47 samples are very similar. This also indicates that the Tweed Lake M47 well in Colville Hills, although 200 kilometers away, is most likely a valid model for the Great Bear Plains area.

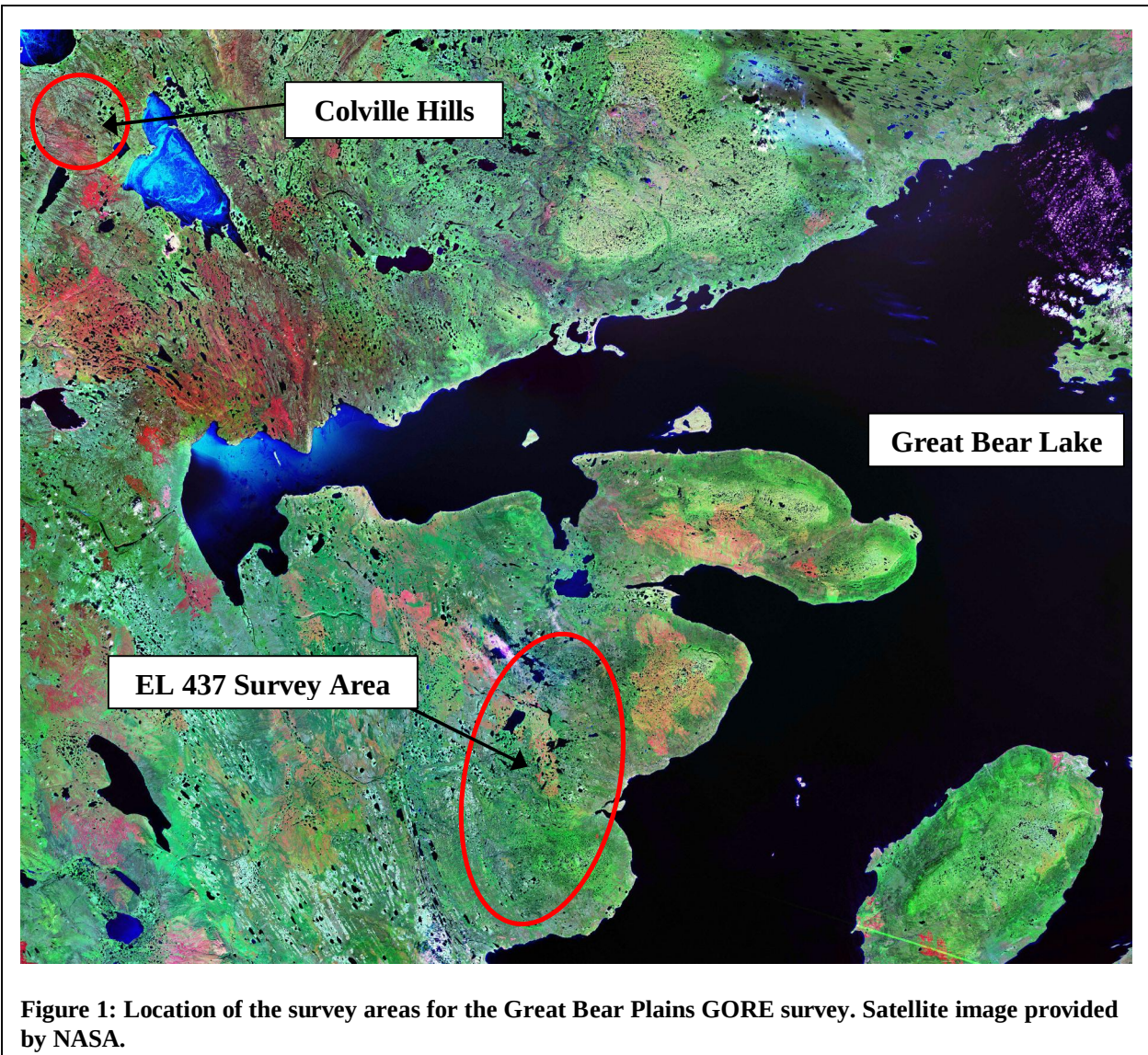
In summary, these results indicate that the EL 437 survey area has potential reservoired hydrocarbons similar to those found in the Mt. Clark formation in Colville Hills. These results also

indicate that the northern part of the survey area and the southern transect are mostly similar to background. All of the geochemical features identified in the various models are located along transects. Therefore the size and shape of any hydrocarbon reservoir that it may represent are not defined. Additional sampling will be needed to determine the extents of the geochemical features in this area. This data can be integrated with future GORE Surveys in the same area if additional sampling is performed.

Geochemical features detected in this survey can be related to the formation(s) of interest or possibly to either shallower or deeper formations in the Great Bear Basin that contain hydrocarbons. Therefore, realistic appraisal of the model result, in the context of its utility for exploration activity in this part of Canada, will require an integrated analysis of available seismic data and rigorous geological interpretation by TALISMAN. Clearly, the extent to which the results of this geochemical survey assist further exploration efforts depends to a large degree on the quality and confidence in other exploration and geological control data with which it will be integrated.

1.0 INTRODUCTION & BACKGROUND

TALISMAN ENERGY INC. (TALISMAN) contracted W. L. GORE & ASSOCIATES (GORE) to conduct a GORE™ Survey for Exploration over an area identified as Great Bear Plains (Exploration License 437) in the Northwest Territories in Canada. The survey area was located in the Great Bear Basin, a shallow Cretaceous basin overlaying lower Paleozoic strata. The location of the EL 437 survey area and the Colville Hills model template are shown on a satellite image in Figure 1. The Cambrian Mount Clark formation was the target sandstone reservoir for this area.



The GORE Survey for Exploration method is an advanced surface geochemical prospecting tool capable of directly detecting and quantifying many organic compounds in the C₂ (ethane) to C₂₀ (phytane) range. Geochemical anomalies are based on the distinction between complex surface geochemical signatures (using pattern recognition techniques) over reservoir and background

areas rather than measurement of individual or compound suite intensities. When properly integrated with other exploration information (seismic time-depth maps, petroleum system data, geological and petrophysical interpretations), the GORE Survey for Exploration can assist in the reduction of exploration risk. For a general description of this surface geochemical exploration technique, refer to Appendix B, “GORE™ Survey for Exploration Surface Geochemical Sampling System”.

2.0 SURVEY OBJECTIVE

The purpose of the surface geochemical survey was to determine the probability of significant hydrocarbon accumulations structurally trapped in the Cambrian Mount Clark formation on Exploration License 437 in the Great Bear Plains area of the Northwest Territories of Canada based on modeled accumulations in the Colville Hills area.

Three wells were selected for acquisition of model calibration samples for the survey. The Tweed Lake M47 well was used to acquire a gas signature from the Mount Clark formation in Colville Hills. The Tweed Lake C12 and Losh Lake dry wells were used to acquire a background emanation signature over both the Colville Hills area and the survey area.

Geologic information provided by TALISMAN for the Great Bear Basin, EL-437, and the model wells are listed in Appendix D, “Customer-Supplied Information”.

To achieve the objective, the following tasks were performed:

1. *Field sample acquisition* using the GORE Module passive soil gas collector. Samples were emplaced at a depth of approximately 50-60 centimeters, left in place for a period of 14 to 19 days and subsequently retrieved.
2. *Model sample acquisition* using the GORE Module passive soil gas collector. Samples were placed near selected petroliferous and background wells/sites, again at a depth of approximately 50-60 centimeters. These samples were left in place for a period of 14 to 16 days and subsequently retrieved.
3. *Laboratory analysis using gas chromatography and mass selective detection (GC/MS)*, of all survey area samples and quality assurance and quality control samples.
4. *Data pre-processing*, to remove extraneous noise variables and compromised samples, and determination of data fitness for use with linear discriminant analysis.
5. *Data Processing and Model Development*. The raw chemical data space was transformed to factor space using principal components analysis, helping to isolate geochemical patterns in the data set. Transformed data were input into Discriminant Analysis to determine the geochemical differences between the end-member model sets and simultaneously compare all survey sample analytical results to the signatures of the geochemical models. The result of

this process was a probability value, indicating whether a given field sample was more geochemically similar to the selected hydrocarbon model site (a high value), or more similar to the character of the selected dry well or background site(s) (a low value).

For more information on the concepts and process of geochemical modeling and the use of discriminant analysis with this geochemical data, refer to Appendix B, “GORE™ Survey for Exploration Surface Geochemical Sampling System”.

3.0 SURVEY DESIGN AND FIELD WORK

The GORE Survey for Exploration sampling scheme was designed by TALISMAN to provide regional coverage over a part of EL 437 in the Great Bear Plains area. The samples were taken along transects with samples spaced approximately 250 to 500 meters apart. In addition to survey grid samples, three wells were chosen for the purpose of acquiring surface geochemical signatures of microseepage emanation over a gas reservoir and dry hole/background locations. These three model sets form the foundation of the geochemical modeling process and differentiate gas-like surface emanation from background-like surface emanation.

GORE contracted PEREGRINE VENTURES INC. (PEREGRINE) to perform all field activities related to the sample installation and retrieval. TALISMAN arrange for all field support including snowmobiles, helicopter, fuel, lodging, meals and local helpers. Field documentation provided by PEREGRINE is provided in Appendix C. The PEREGRINE field teams installed GORE Module passive soil gas samplers on three hundred thirty four (334) grid locations in the survey area and eighteen (18) samplers along a transect in Colville Hills area. In addition to the grid samples, PEREGRINE installed forty four (44) geochemical samples at the three model well sites. Model sites, model objective, location coordinates and relevant comments are summarized in Table 1. Additional background information provided by TALISMAN appears in Appendix D, “Customer-Supplied Information”.

TABLE 1

Model ID	Longitude*	Latitude*	Model Objective	Model Comments
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Tweed Lake C12	126.053403 W	67.017077 N	DRY	Drilled and abandoned, slight gas shows
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* NAD 83 Datum

At each sample location the associated module serial number was recorded and sampler location coordinates (in UTM Zone 10 relative to the NAD 83 datum) were acquired by PEREGRINE in the field using hand-held global positioning system (GPS) receivers. The sample location coordinates are included in Appendix A, “Model Input Information and Probability Values Summary”, and in Appendix C, “Field Documentation and Survey Sampler Information”. Field

operations were conducted during the time period between 21st February 2007 and 29th March 2007.

Of the 352 survey grid samplers and 44 geochemical model samplers installed by PEREGRINE, 344 grid and all 43 model samples were recovered. A full reconciliation summary for all samples is provided in Appendix C.

4.0 SAMPLE INSPECTION AND QA/QC ANALYSIS

4.1 Sample Inspection

All GORE passive soil gas modules were inspected upon receipt at the GORE laboratory in Elkton, Maryland, USA. Among the conditions checked were sampler container seal integrity, condition of the samplers, and proper sequence of sampler numbers. All samples were found to be in good order and subsequently were randomized during check-in in preparation for analytical sequencing.

Field installation and retrieval documentation (paper and electronic formats) received from PEREGRINE was also reviewed during the reconciliation and data processing functions. A full sample reconciliation summary is provided in Appendix C.

Once scheduled for analysis, the samples were prepared and loaded as needed. Laboratory analysis of the samplers was performed, using gas chromatographic separation and mass selective detection (GC/MS), for 85 compounds according to procedures and methods developed by GORE specifically for use with GORE Survey for Exploration. Analytical QA/QC includes analysis of reference standards for all target compounds, as well as regular analysis of method and instrument blanks. These procedures and methods are discussed in Appendix B, “GORE Survey for Exploration, Surface Geochemical Sampling System”. The complete compound list is shown in Table 2, Analytical Compound List by Compound Class.

Table 2: Analytical Compound List by Compound Class

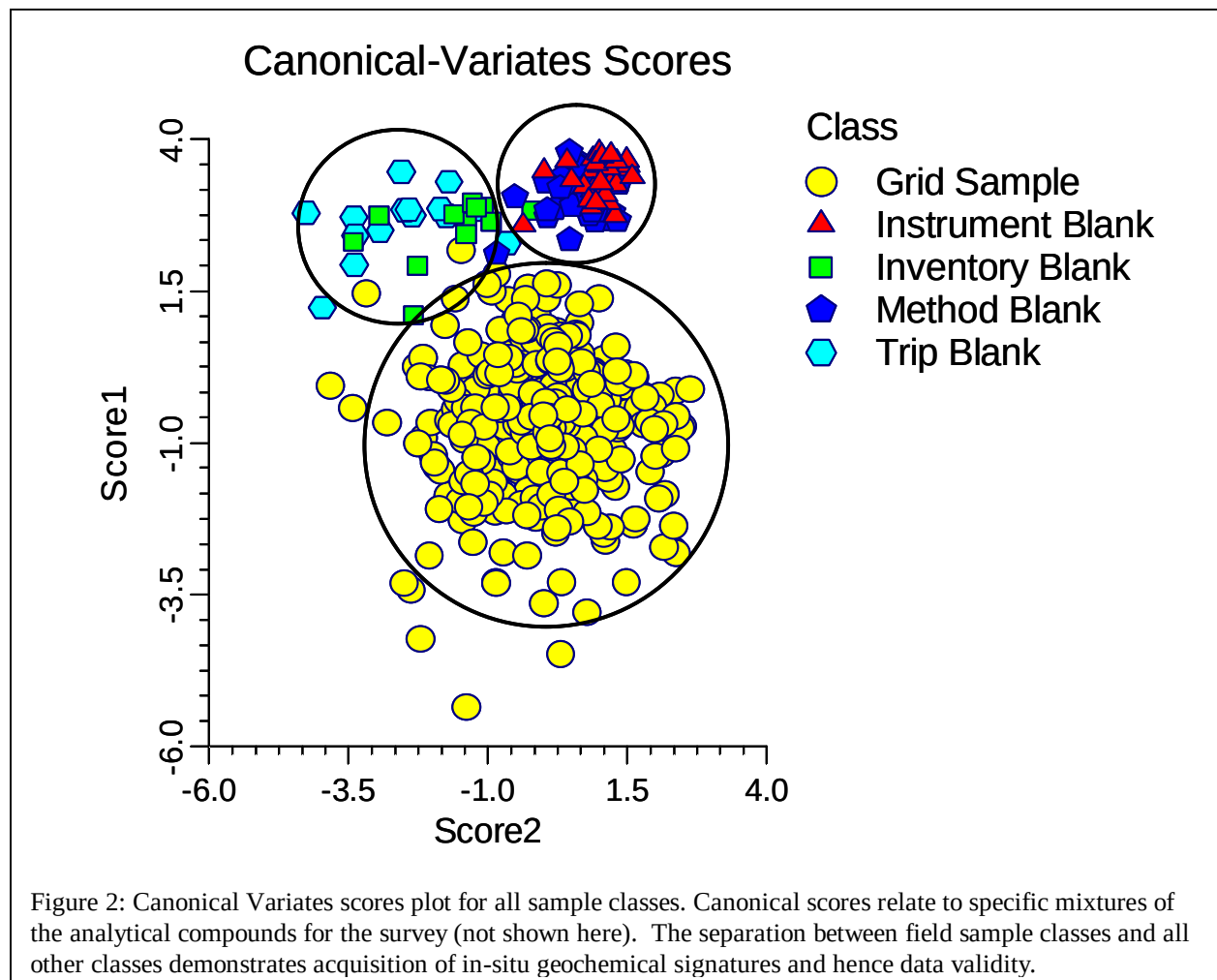
Typical Petroleum Constituents Hydrocarbon number in ()			
Normal Alkanes	Iso-alkanes	Cyclic Alkanes	Aromatics and PAH*
Ethane (2)	2-Methylbutane (5)	Cyclopentane (5)	Benzene (6)
Propane (3)	2-Methylpentane (6)	Methylcyclopentane (6)	Toluene (7)
Butane (4)	3-Methylpentane (6)	Cyclohexane (6)	Ethylbenzene (8)
Pentane (5)	2,4-Dimethylpentane (7)	cis-1,3-	m,p-Xylenes (8)
Hexane (6)	2-Methylhexane (7)	Dimethylcyclopentane (7)	o-Xylene (8)
Heptane (7)	3-Methylhexane (7)	trans-1,3-	Propylbenzene (9)
Octane (8)	2,5-Dimethylhexane (8)	Dimethylcyclopentane (7)	1-Ethyl-2/3-methylbenzene (9)
Nonane (9)	3-Methylheptane (8)	trans-1,2-	1,3,5-Trimethylbenzene (9)
Decane (10)	2,6-Dimethylheptane (9)	Dimethylcyclopentane (7)	1-Ethyl-4-methylbenzene (9)
Undecane (11)	Pristane (19)	Methylcyclohexane (7)	1,2,4-Trimethylbenzene (9)
Dodecane (12)	Phytane (20)	Cycloheptane (7)	Indane (9)
Tridecane (13)		cis-1,3/1,4-	Indene (9)
Tetradecane (14)		Dimethylcyclohexane (8)	Butylbenzene (10)
Pentadecane (15)		cis-1,2-	1,2,4,5-Tetramethylbenzene (10)
Hexadecane (16)		Dimethylcyclohexane (8)	Naphthalene (10)
Heptadecane (17)		trans-1,3/1,4-	2-Methylnaphthalene (11)
Octadecane (18)		Dimethylcyclohexane (8)	
		trans-1,2-	
		Dimethylcyclohexane (8)	
		Ethylcyclohexane (8)	
		Cyclooctane (8)	
		Propylcyclohexane (9)	
Byproduct / Alteration and Other Compounds			
Alkenes	Aldehydes	Biogenic	NSO* and Other Compounds
Ethene (2)	Octanal (8)	alpha-Pinene	Furan
Propene (3)	Nonanal (9)	beta-Pinene	2-Methylfuran
1-Butene (4)	Decanal (10)	Camphor	Carbon Disulfide
1-Pentene (5)		Caryophyllene	Benzofuran
1-Hexene (6)			Benzothiazole
1-Heptene (7)			Acenaphthylene
1-Octene (8)			Carbonyl Sulfide
1-Nonene (9)			Dimethylsulfide
1-Decene (10)			Dimethyldisulfide
1-Undecene (11)			

*PAH = polyaromatic hydrocarbons, NSO = nitrogen, sulfur, oxygen compounds

4.2 QA/QC Analysis

Following completion of laboratory analysis and data reduction, and prior to any data pre-processing, a comparison between the raw chemical data collected from the grid and model site locations (collectively known as “grid samples”) and the various categories of quality assurance / quality control blanks was done using canonical variates analysis. The objective of this comparison was to evaluate, on a gross scale, whether there was significant difference in signature

between the various classes of field samplers and QA/QC blanks with respect to the measured compound data. Separation of class centroids is necessary to demonstrate that the field sample signal content is not a function of sample manufacture, exposure to a trip-related event, or a laboratory-induced artifact. The comparison is shown graphically in Figure 2 in the form of canonical scores plots for each sample and each sampler class. For this comparison, the canonical plot for variate score 1 vs. variate score 2 were selected to demonstrate the inherent difference between the various sampler classes. The canonical-variate scores relate to specific mixtures of target compounds.



Instrument blank class data represents analytical data recorded with no sample inserted in the GC/MS instrument, and is meant to show the inherent instrument condition. The method blank class records the analysis of clean, isolated GORE Modules, and is meant to demonstrate analytical process conditions. The inventory blank class presents data for isolated “unused” samplers (retained in inventory at the laboratory but assigned to the project) from the same sample lot as those sent to the field. The trip blank class of data records the conditions present to the survey samples in transit to and from the field, and should be similar to the “inventory blank” sample class.

Figure 2 shows some significant features:

1. The plot shows that all of the blank classes are distinct from the field class, implying that the chemical signatures of the field class samples are not related to the instrument or analytical conditions.
2. The lack of separation of the cluster centroids of the trip blank class from the inventory class indicates that there was no transit-related effect in the samples.
3. The separation of the cluster centroids of the trip blank class from the field class (grid samples) indicates the field sampler classes contain valid signal that is not a transit-related effect, but is a result of exposure to the shallow subsurface environment.

As a result of this analysis, the sample data were deemed fit for use in further processing and geochemical model development.

Following canonical discriminant analysis, a review of the raw field sample signal output and the blank sample noise output (signal to noise analysis) for the chemical data is performed and certain chemical variables are disqualified, where appropriate. The following compounds listed in Table 3 were removed based on signal to noise and other QA/QC criteria.

TABLE 3
List of Signal to Noise Failed Compounds

Dimethyl Disulfide	1-Nonene	Octanal
Furan	o-Xylene	Benzofuran
1-Hexene	alpha-Pinene	Butylbenzene
Hexane	Propylbenzene	Nonanal
2-Methylfuran	1-Ethyl-2/3-methylbenzene	1,2,4,5-Tetramethylbenzene
Benzene	1,3,5-Trimethylbenzene	Camphor
1-Heptene	beta-Pinene	Decanal
Toluene	1-Ethyl-4-methylbenzene	Benzothiazole
Ethylbenzene	1-Decene	Caryophyllene
m,p-Xylenes	1,2,4-Trimethylbenzene	Acenaphthylene

Field installation and retrieval documentation was further evaluated to identify samples that may have undergone severe disturbance or tampering in the field. Again, where appropriate, these samples were removed from the data set.

The resulting data were then further processed using principal component analysis (PCA) to characterize the overall geochemical data space. This process transforms the data space such that each sample is no longer expressed relative to specific target compound axes (many of which might be correlated), but is expressed relative to sets of orthogonal (uncorrelated) factor axes. Specifically, PCA re-orientates the data along directions of variance in the data set (factor 1 is the direction of maximum variance, factor 2 is the second largest direction of variance constrained to be orthogonal to factor 1, and so on). PCA also aids further identification of chemical variable

and sample outliers that may need to be disqualified prior to model development. Outliers are removed and the data are re-processed. During sample reconciliation and PCA, the following sample issues were identified and are indicated in Table 4, as is the appropriate outcome.

TABLE 4
List of Disqualified Samples

Module #	Index #	Outcome
521269	347	Removed - Outlier in PCA
521591	387	Removed - Outlier in PCA
521783	3009	Removed - Outlier in PCA
521584	NA	Sample not Recovered in Field
521263	NA	Sample not Recovered in Field
521446	NA	Sample not Recovered in Field
521516	NA	Sample not Recovered in Field
521623	NA	Sample not Recovered in Field
521716	NA	Sample not Recovered in Field
521786	NA	Sample not Recovered in Field
521894	NA	Sample not Recovered in Field
521723	NA	Sample not Recovered in Field

The net output of the foregoing evaluation and processing steps is a statistical factor scores matrix, based on qualified chemical variables and field samples. Factor scores for each sample are used in the geochemical modeling steps.

5.0 GEOCHEMICAL DATA INTERPRETATION STRATEGY

Hydrocarbon compounds exist naturally in the soil gas environment even in areas without petroleum accumulations. The geochemical variations in soil gas data that distinguish subsurface sources of hydrocarbons from surface sources of hydrocarbons are often subtle and may be difficult to identify visually. Therefore, soil gas data are processed statistically using mathematic transformation and classification algorithms such as Principal Components Analysis (PCA), Hierarchical Cluster Analysis (HCA), and Linear Discriminant Analysis (LDA). For brief descriptions of these methods as applied to the evaluation of soil gas data, refer to Appendix B, “GORE™ Survey for Exploration”.

The objective of GORE geochemical data interpretation is to identify areas of petroleum emanation from subsurface accumulations (oil, condensate or gas). This is accomplished by the geochemical modeling, a process developed by GORE specifically for use with GORE™ Survey data. The geochemical modeling process may involve defining the character of petroleum hydrocarbon and background soil gas signatures at several “known” locations, or model well sites. Petroleum production wells from the same geological setting as the survey area, not depleted and as near to original pressure conditions as possible, are the best candidates for modeling petroliferous character. Dry well sites with absolutely no detected hydrocarbons in the stratigraphic column are the best candidates for modeling geochemical background. Typically 15 samples are used at each model site to sample the geochemical variability of the influence of

interest. Model well sites are in essence geochemical calibration areas, where appropriate reservoir conditions are known to exist or to be absent. The surface geochemical signatures obtained from such areas are used in the supervised classification of all survey samples.

If suitable model well sites are not available or non-existent in the survey region, it is possible to develop the required geochemical calibration using survey samples directly. In this case, cluster analysis techniques are applied to the survey data as a whole, and the cluster results are evaluated for evidence of petroleum influence. This is the usual interpretation strategy for surveys conducted in frontier areas and during initial concession block assessments.

Three calibration sites were selected for geochemical sampling for this project, including two dry well sites and one gas discovery well site. The role of these wells in the interpretation process is discussed below.

The Tweed Lake M47 gas discovery well was intended to be the gas calibration site for this survey. It is the closest gas discovery to the survey area, but this is a distance of approximately 200 kilometers. Although the Colville Hills area, where the Tweed Lake M47 gas well is located, has similar geology and source rock to the survey area there is some uncertainty if applying this gas discovery as a template for the survey area is appropriate. Changes in lithology and source rock chemistry can affect the chemical makeup of gas and oil over long distances.

The Tweed Lake C12 dry well site was intended to be a calibration model for background in the Colville Hills area. This well is also located approximately 200 kilometers away from the survey area but is located only ten kilometers from the Tweed Lake M47 gas discovery well.

The Losh Lake dry well site was intended to be a calibration model for background. It is the closest dry hole with no shows of hydrocarbons, located approximately 25 kilometers north of the survey area.

Based on this geological and model information the interpretation strategy was to:

1. Process the data using PCA.
2. Use LDA to make a geochemical model of gas based on the Tweed Lake M47 well as the gas end-member versus the Tweed Lake C12 and Losh Lake dry wells as the background end-member.
3. Compare the results of this geochemical model to the eighteen sample transect which passes through the Tweed lake M47 well and integrate this with geological information to determine if the model is valid for Colville Hills.
4. Use the results of the Tweed Lake M47 model to make a map of gas-like distribution for the EL 437 survey area.
5. Use cluster analysis and LDA including only the samples placed in the EL 437 survey area and Losh Lake to determine hydrocarbon signatures and regional background character. Map the resulting gas-like probabilities.

6. Compare the hydrocarbon signature and map derived from cluster analysis to the results obtained using the Tweed Lake M47 gas well.

6.0 SURVEY RESULTS

Discussion of the geochemical models developed for the Great Bear Plains survey area and a brief description of significant geochemical anomalies identified are given in the sections below. It is important to realize that the results of geochemical modeling are empirical; they are a function of, and are defined only with respect to the specific data of this survey. Moreover, hydrocarbon compounds may appear in the profile of geochemical background character, meaning that not every hydrocarbon compound will correlate with the occurrence of petroleum accumulations. The geochemical modeling process is meant to identify those hydrocarbon compounds that correlate with “reservoir” character as defined by the selected model sets.

6.1 Model Development & Results

6.1.1 Development of “Supervised” Geochemical Model of Gas Emanation

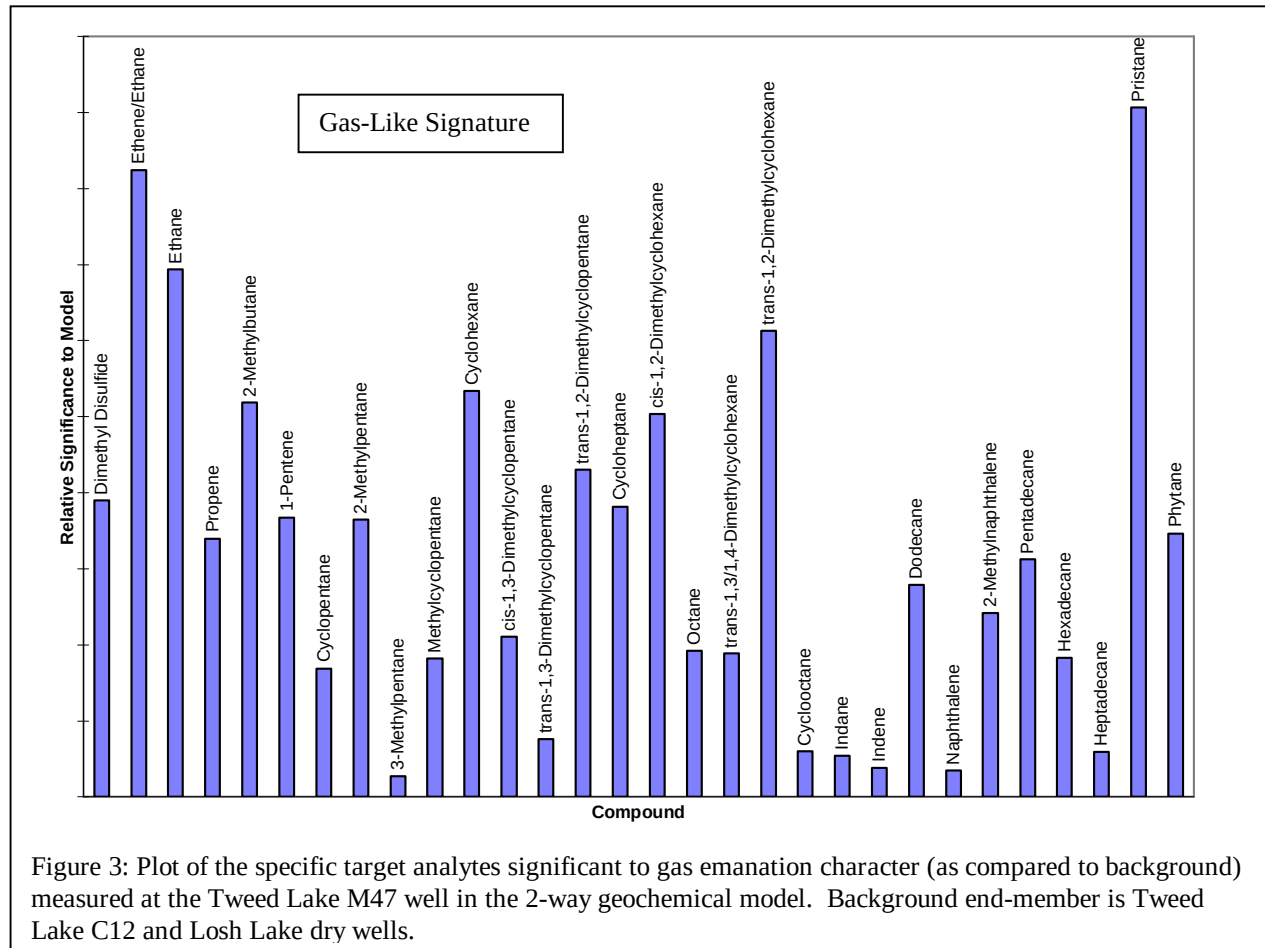
Geochemical model calibration samples were collected from three locations: one known to be directly above a charged gas reservoir, and two sites known to be devoid of hydrocarbon accumulations. Two-way modeling efforts were used to define the gas signature from the background signature and the following model was developed:

Tweed Lake M47 Gas Model

All samples from the Tweed Lake M47 gas well were used to define the general character of gas reservoir emanation at the surface. Similarly, all samples from the Tweed Lake C12 and Losh Lake dry wells were used to define “background” emanation character.

The model was developed using the end-member sample sets to collectively define their respective “gas-like” and “background-like” emanation signatures in two-way discriminant analysis. This process produces a statistical separation of the end members, defining which principal component factors best discriminate or separate the centroids of the defined classes.

The orientation (or vector) of maximum separation between the end-member centroids in the models can be related back to the original compound data axes by the factor loading values derived for each qualified organic compound in the target compound list. The correlation between this orientation and each compound was calculated for the samples of the two end-members and defines the geochemical model. The model can be viewed graphically to show which compounds are of most significance to end-member characters. However, for clarity only the compounds significant to the character of gas emanation are shown on the plot (Figure 3). The longer the plotted lines shown in the chart, the more significant is the compound to the overall signature of gas-like surface emanation character.



Tweed Lake M47 (Figure 3) appears to be geochemically stable and is a reasonable chemical expression for “gas” in our experience. The model is stable in the sense that the “gas character” is not a function of one compound only, or a small number of compounds isolated across the range of analysis. Such a condition is a sign of model instability, as isolated compounds or single compound occurrence is not thought to represent realistic geochemical source influence. The model consists of light and medium range aliphatic compounds (commonly associated with gas and condensate) in the C₂ to C₈ range; the C₁₅ and C₁₇ normal alkanes plus pristane and phytane.

6.1.2 Development of “Unsupervised” Geochemical Model of Gas Emanation

Hierarchical Cluster Analysis was applied to the samples collected in the EL 437 survey area and Losh Lake. Clusters 7 and 13 appeared to be highly correlated with principle components and their signatures exhibit characteristics similar to a gas signature. Clusters 15 and 17 had little correlation with principle components and their signatures exhibit characteristics similar to background. Of the fifteen samples placed around the Losh Lake dry hole, thirteen samples were in clusters 15 and 17. Figure 4 shows the dendrogram and the correlation of the clusters to the principle components. Plots of the signatures for clusters 15, 17, and Losh Lake are shown in

Figures 5, 6 and 7 as examples of background. Plots of signatures for clusters 7, 13 and Tweed Lake are shown in Figure 8, 9 and 10 as examples of gas or gas/condensate signatures.

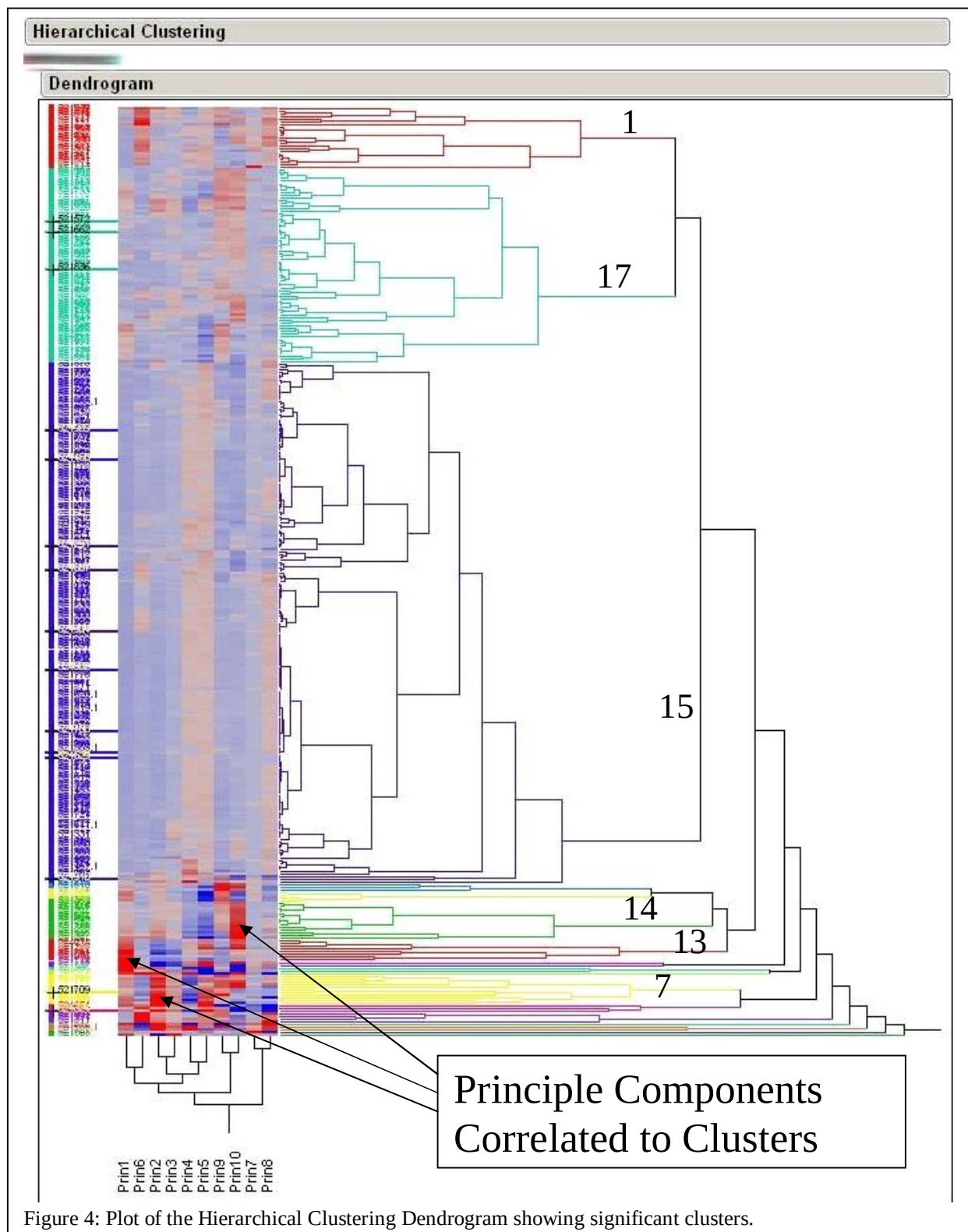


Figure 4: Plot of the Hierarchical Clustering Dendrogram showing significant clusters.

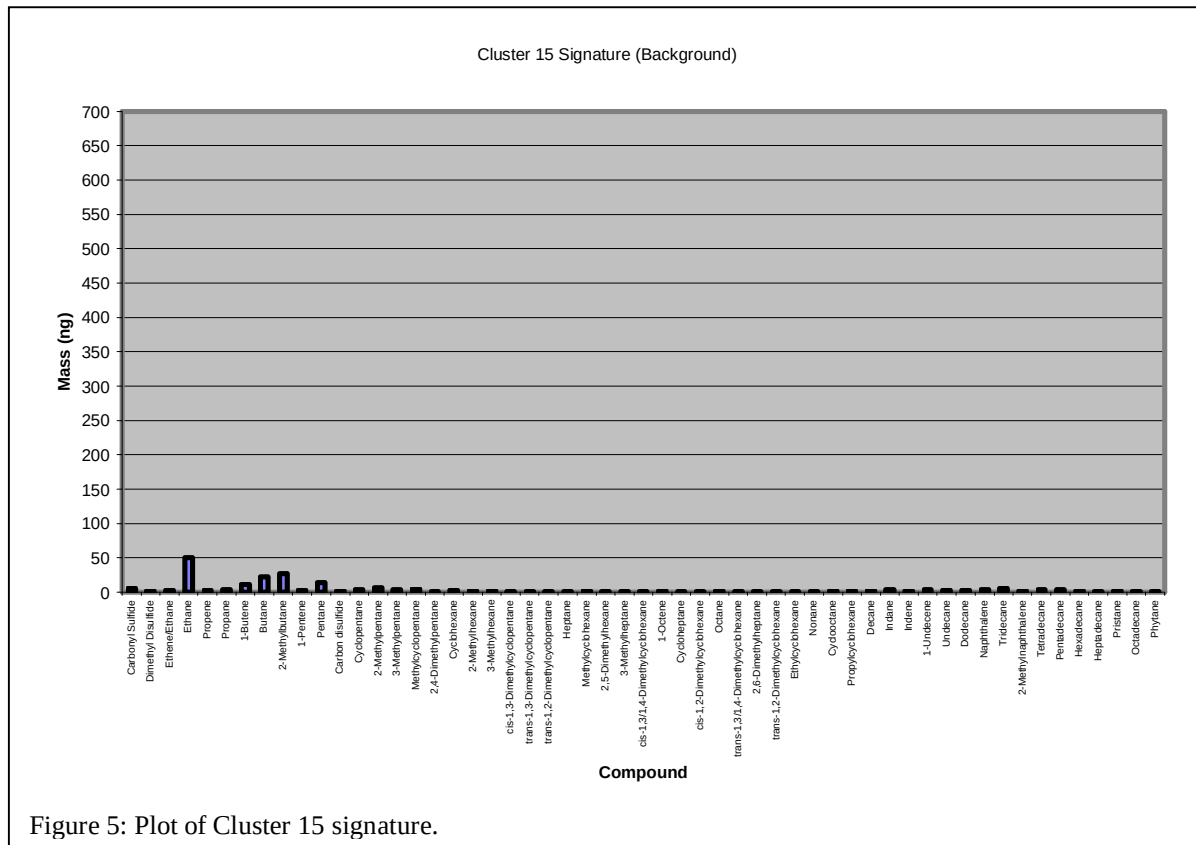


Figure 5: Plot of Cluster 15 signature.

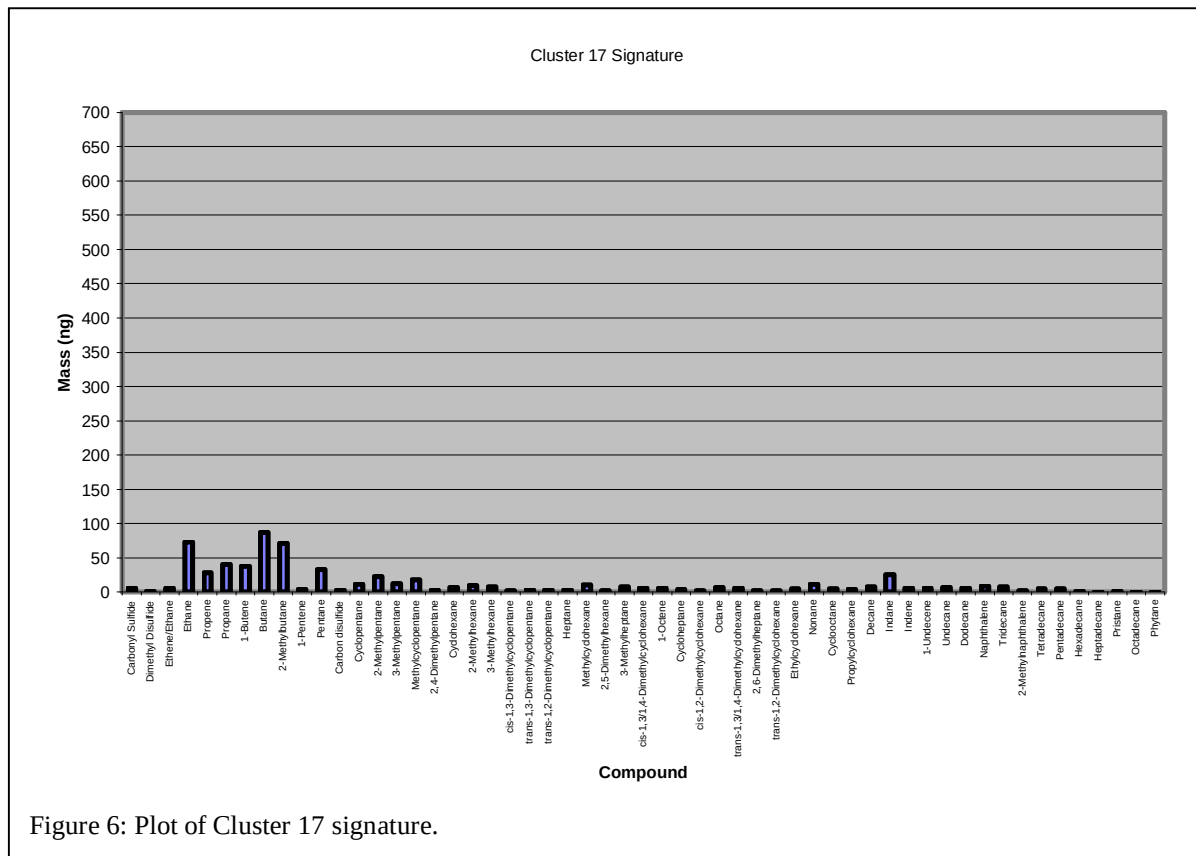


Figure 6: Plot of Cluster 17 signature.

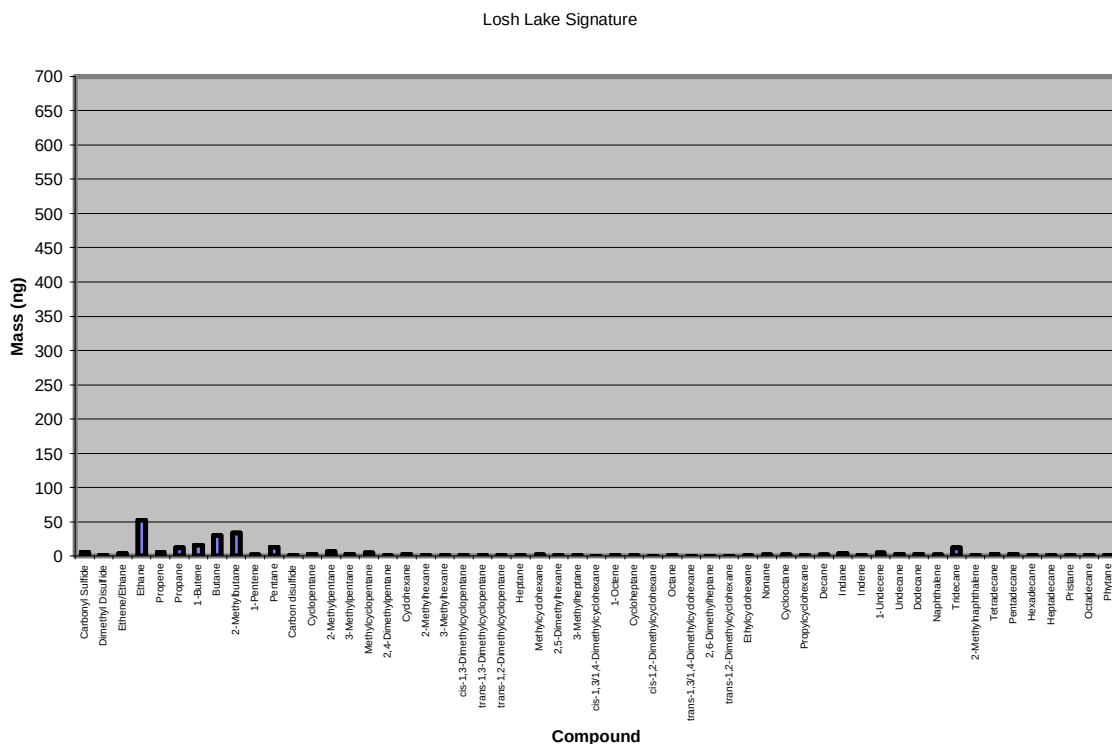


Figure 7: Plot of Losh Lake signature.

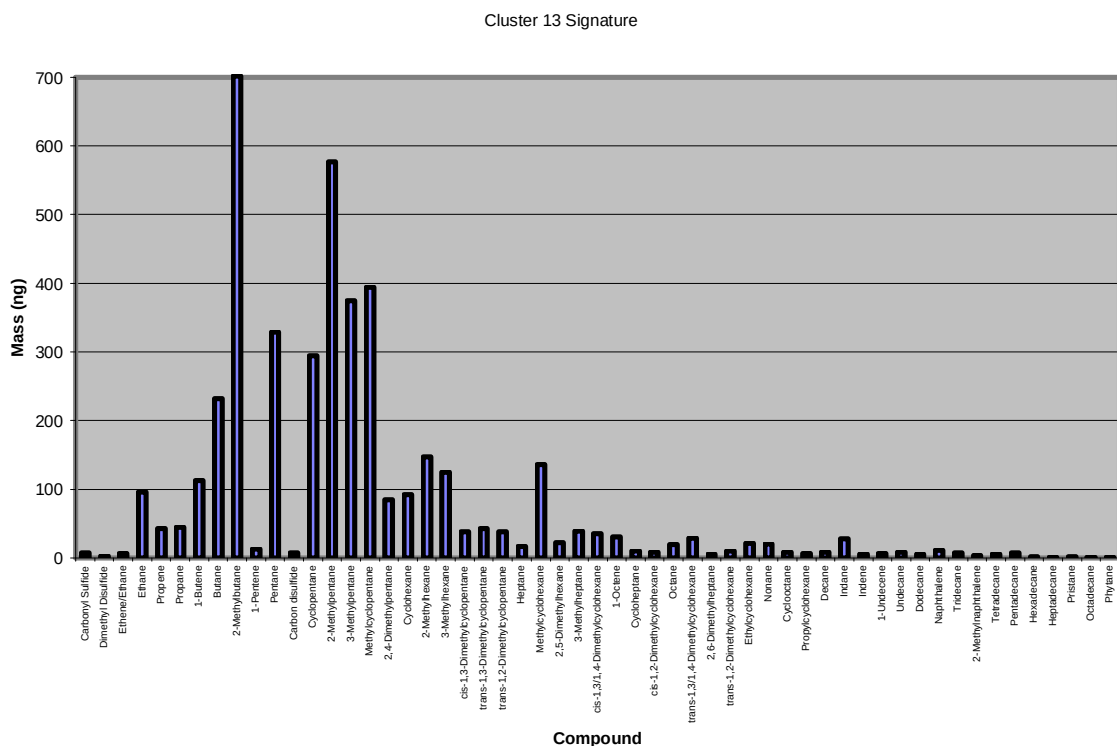


Figure 8: Plot of Cluster 13 signature.

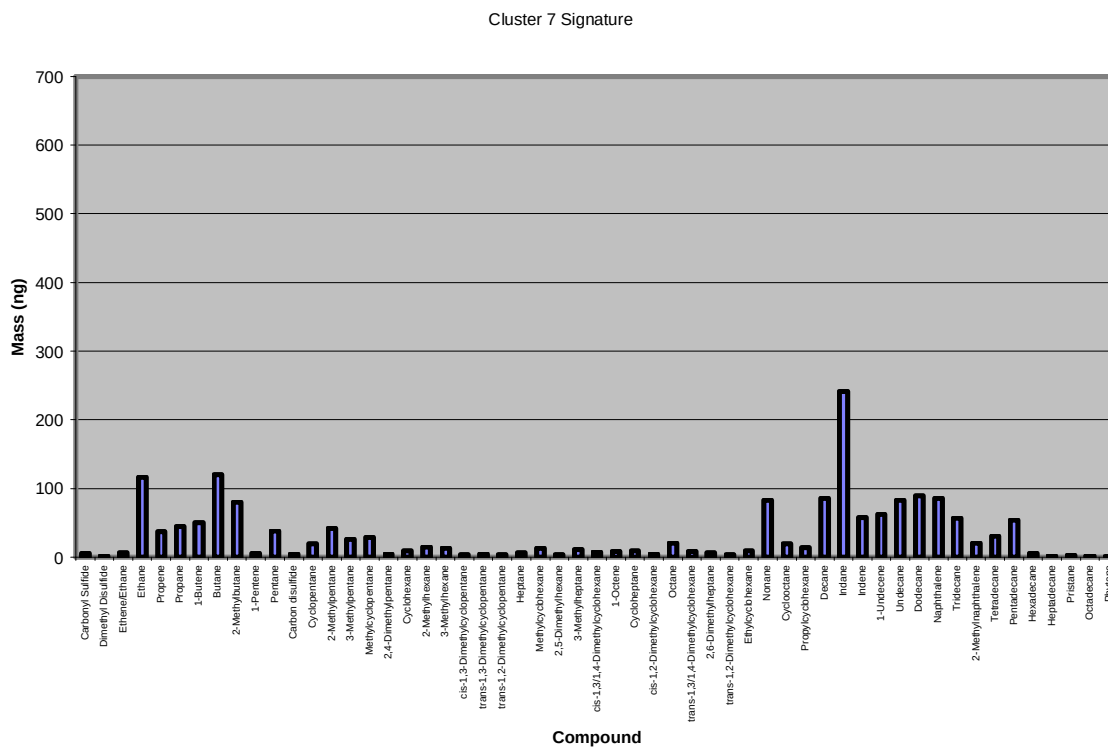


Figure 9: Plot of Cluster 7 signature.

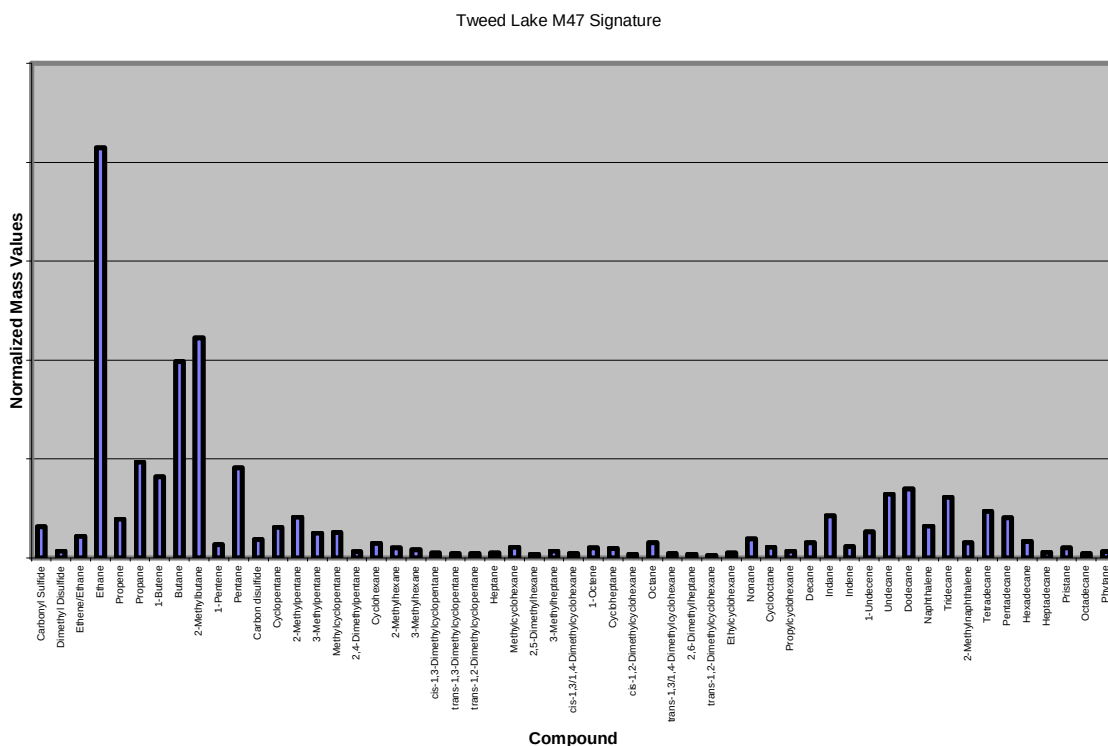


Figure 10: Plot of Tweed Lake M47 signature

Based on the known information for the Losh Lake dry hole and that thirteen of the fifteen samples placed around the Losh Lake well are included in the background clusters the samples from Losh Lake were used as the background end-member in all the cluster models. Two-way modeling efforts were used to define the gas signature, as defined by the different clusters, from the background signature and the following models was developed:

Cluster 13 Gas Model

The signature for Cluster 13 consisted primarily of light aliphatic hydrocarbons in the C₂ to C₇ range and therefore all samples from Cluster 13 were used to define the general character of gas emanation at the surface. Fourteen samples from the Losh Lake dry well were used to define “background” emanation character.

Cluster 7 Gas Model

The signature for Cluster 7 consisted primarily of light aliphatic hydrocarbons in the C₂ to C₆ range plus normal alkanes in the C₉ to C₁₅ range similar to those found at the Tweed Lake M47 well. Therefore all samples from Cluster 7 were used to define the general character of gas/condensate emanation at the surface. Fourteen samples from the Losh Lake dry well were used to define “background” emanation character.

Combined Clusters 7 and 13 Gas Model

All samples from Clusters 7 and 13 were used to define the general character of gas emanation at the surface. Fourteen samples from the Losh Lake dry well were used to define “background” emanation character.

All samples and their appropriate cluster designation are listed in Appendix A, “Model Probability Values Summary”.

6.1.3 Geochemical Results

During linear discriminant analysis each sample is classified with respect to its probability of membership to either end-member class. For a 2-way discriminant model this is done by mathematically projecting each sample onto the axis that separates the end-member class centroids, the centroids being determined by the specific samples used to define each class. The “dry” class centroid represents 0% probability of gas-like class membership and the “gas” class centroid represents 100% probability of gas-like class membership. Any sample that “projects” beyond the class centroid receives a probability value of either 0% or 100%. A simplistic illustration of this concept is shown below in Figure 11. Derived probability values for all samples relative to each model are given in Appendix A, “Model Probability Values Summary”.

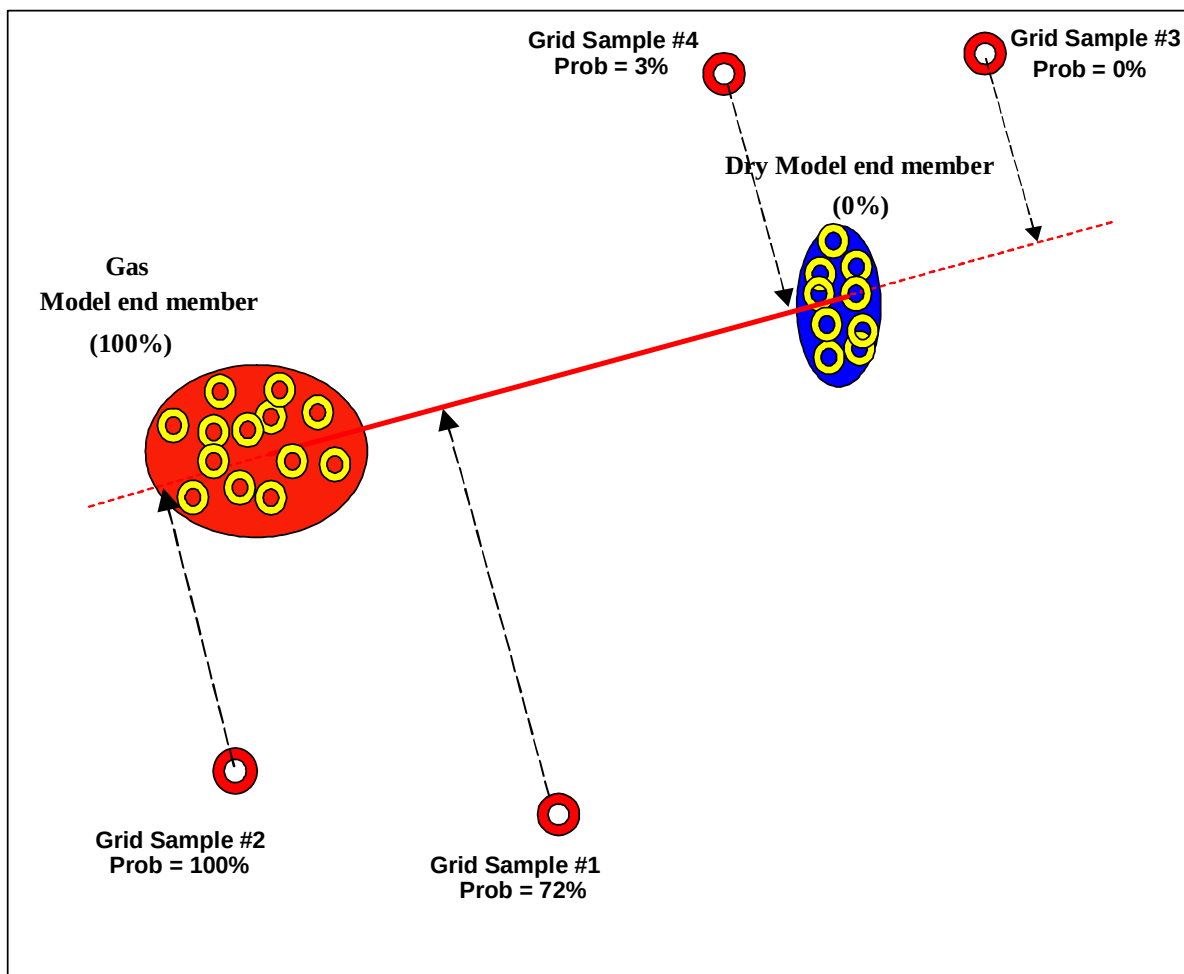


Figure 11: Schematic illustration of model class centroid separation as determined in discriminant analysis. Each sample is assigned a probability value by mathematical projection (black dashed arrows) onto the axis of

Important Notes:

- The contour surface developed between actual sampled locations is an estimate of the probability and is subject to uncertainty.
- The degree of uncertainty in this estimate will increase with distance from each sampled location.
- The interpolation of the data surface does not account for discontinuity or geological fabric within the survey area (such as faulting or other geological boundary conditions). The geological fabric may be apparent, however, if the sample density is sufficient to resolve it.

Probability values for the models are presented as color contour maps Plates 1 through 5. An image (not at actual scale) of the probability surface for the models of the Colville Hills and EL

437 survey areas are shown in Figures 12 through 16. These maps illustrate computer-generated contour surfaces of probability values calculated for each sample location. The configuration of the contoured surface is a function of the sampler spacing and density, as well as the probability values of the samples. When viewing the contoured data surfaces, it is important to realize that probability values are most accurate at the actual sampled locations.

High probability values indicate regions within the survey area that exhibit a similar character to the modeled gas reservoir production signature, as collectively defined by the input model samples. A geochemical feature, as referred to in this report, is defined as any collection of contoured probability values which seem to exhibit a common geochemical influence. General observations are summarized below (refer to Plates 1 through 5 and Appendix A).

The results for the Tweed Lake M47 gas-like model in Colville Hills identified a geochemical feature over the Tweed Lake field (Figure 12). The geochemical feature extends along a transect from 1.5 kilometers northeast of the Tweed Lake M47 gas well to 2 kilometers southwest of the well to the end of the transects. This 3.5 kilometer geochemical feature appears to correlate closely with the subsurface reservoir for Tweed Lake. The results for this same model applied to the EL 437 survey area identified several potential large geochemical features shown in Figure 13. These geochemical features may trend slightly NNW-SSE between transects but additional infill samples will be needed to determine this.

The results for the Cluster 13 gas-like model detected only two geochemical features, noted on Figure 14. The signature of this cluster was mostly like light gas with fewer of the higher C₉₊ compounds found in both the Tweed Lake model and in Cluster 7. The southern transect in this model as well as the northern part of the survey area are almost entirely similar to background.

The results for the Cluster 7 gas-like model are shown in Figure 15. Three geochemical features were detected and although smaller in size are located in the same area as the geochemical features on the Tweed Lake M47 model. This correlation is understandable since the signatures of Cluster 7 and Tweed Lake M47 are very similar. It also indicates that the Tweed Lake M47 well in Colville Hills, although 200 kilometers away, is most likely a valid model for the Great Bear Plains area. The area in the northern part of the survey area is mostly similar to background.

The results for the Combined Clusters 7 and 13 gas-like model are shown in Figure 16. Four prominent geochemical features were identified which closely correlate to the geochemical features identified in the Cluster 7 and Tweed Lake Models. As in all the other models, the area in the north part of the survey area is mostly similar to background.

All of the geochemical features identified in the various models are located along transects. Therefore the size and shape of any hydrocarbon reservoir that these may represent are not defined. Additional sampling will be needed to determine the extents of the geochemical features in this area. In order to give a more detailed geologic interpretation of the results the geochemical data needs to be integrated with other geological and geophysical information for the survey area.

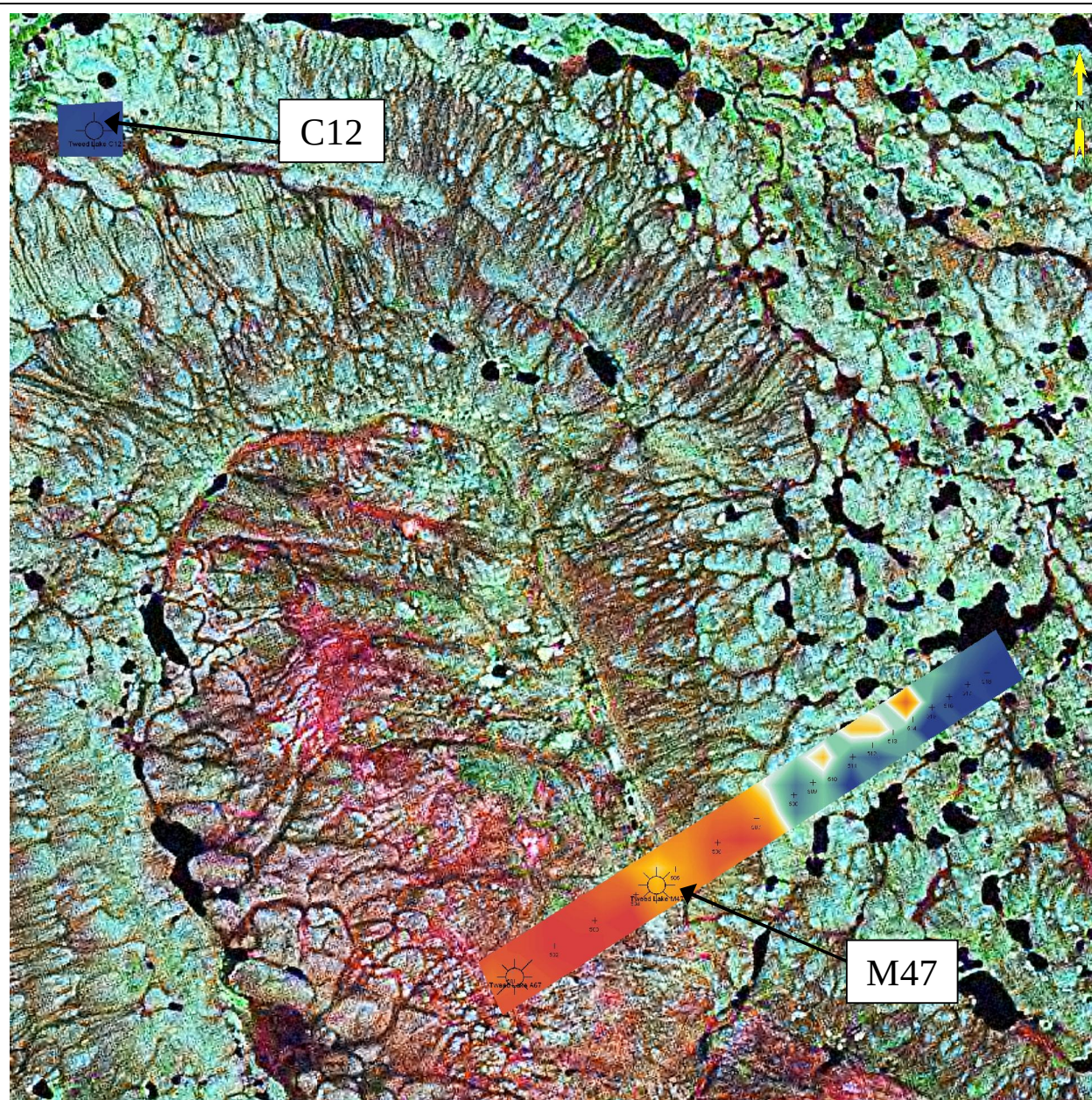


Figure 12: Tweed Lake M47 Gas-Like Probability Distributions, Colville Hills area.

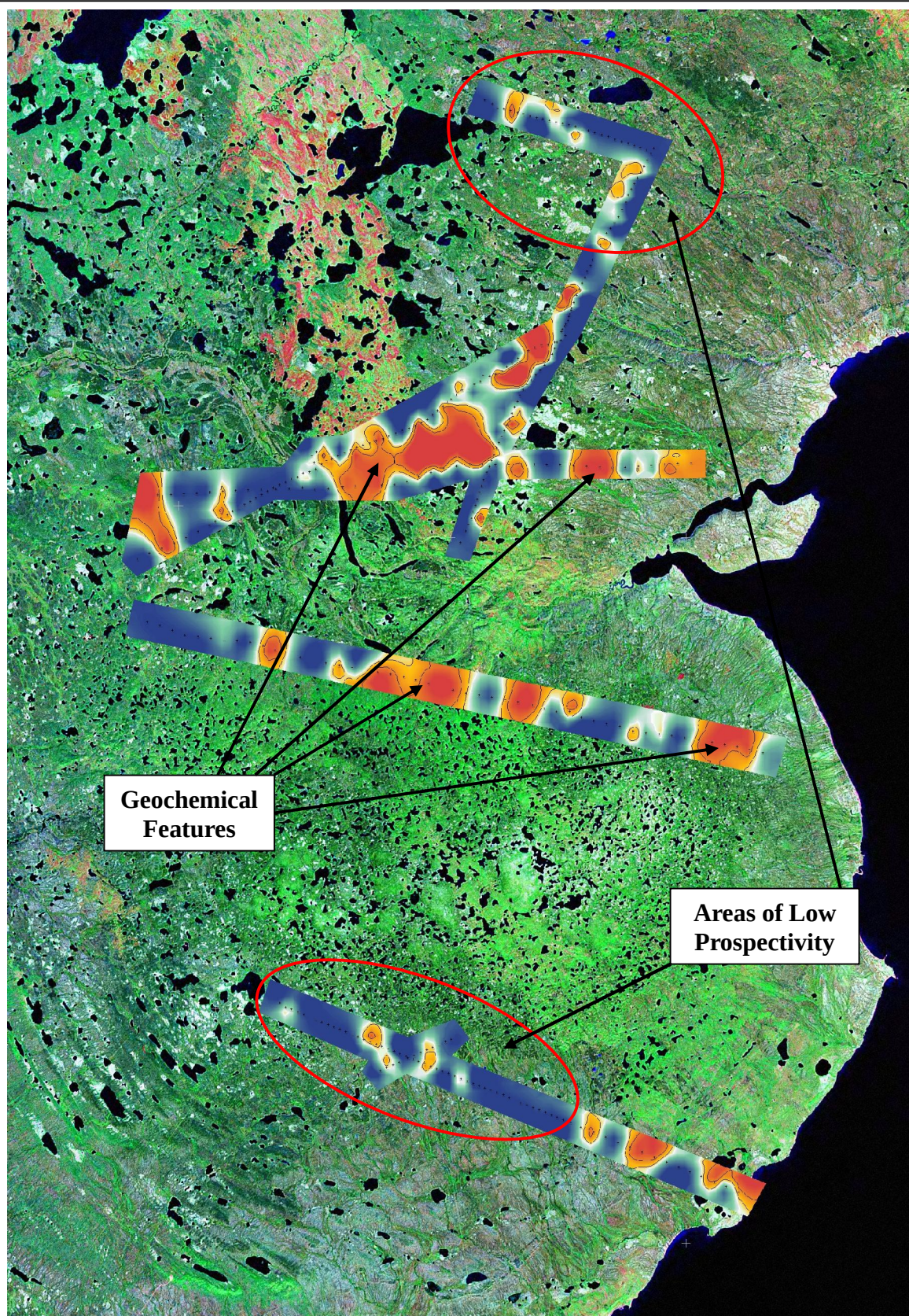


Figure 13: Tweed Lake M47 Gas-Like Probability Distributions, EL 437 area.

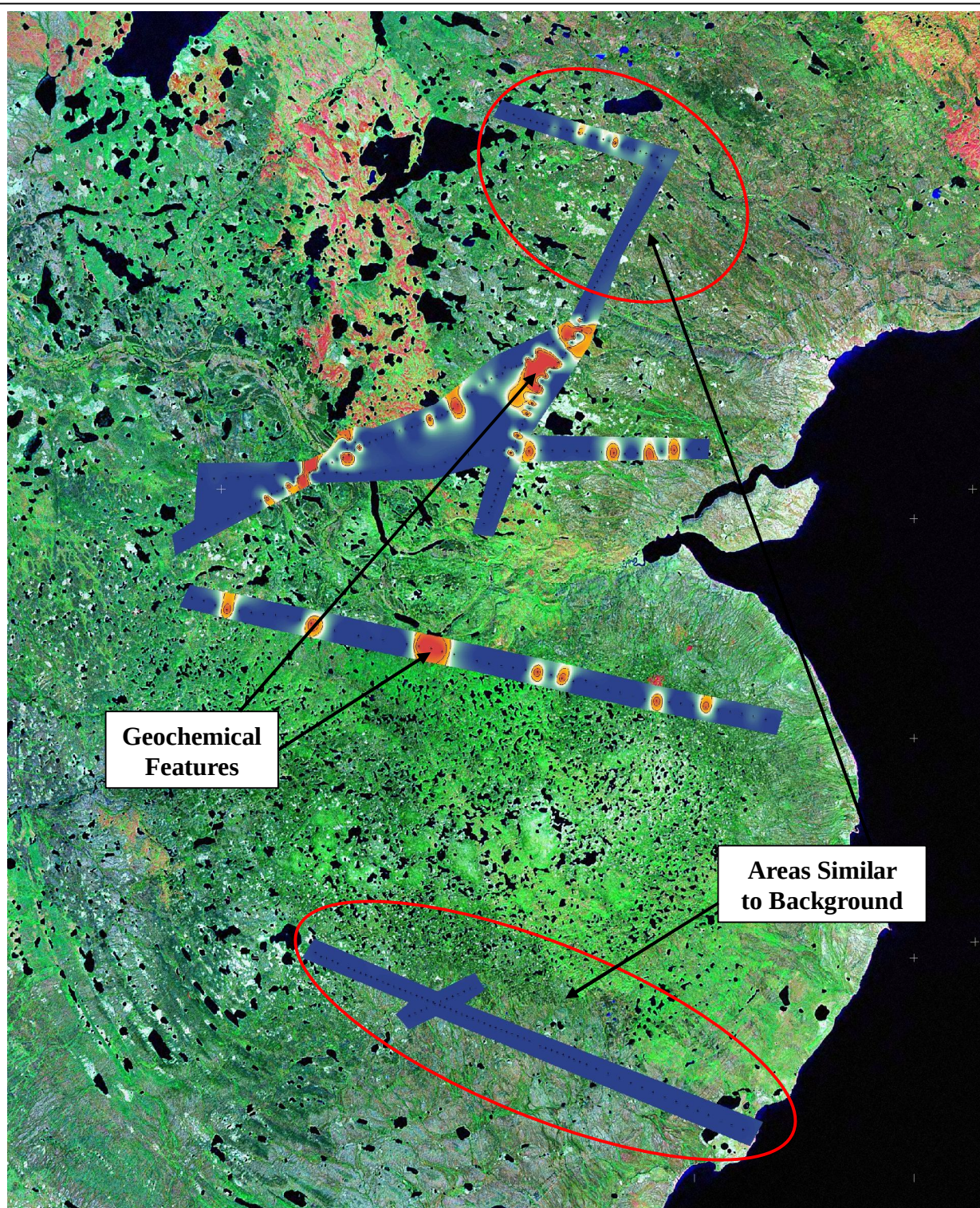
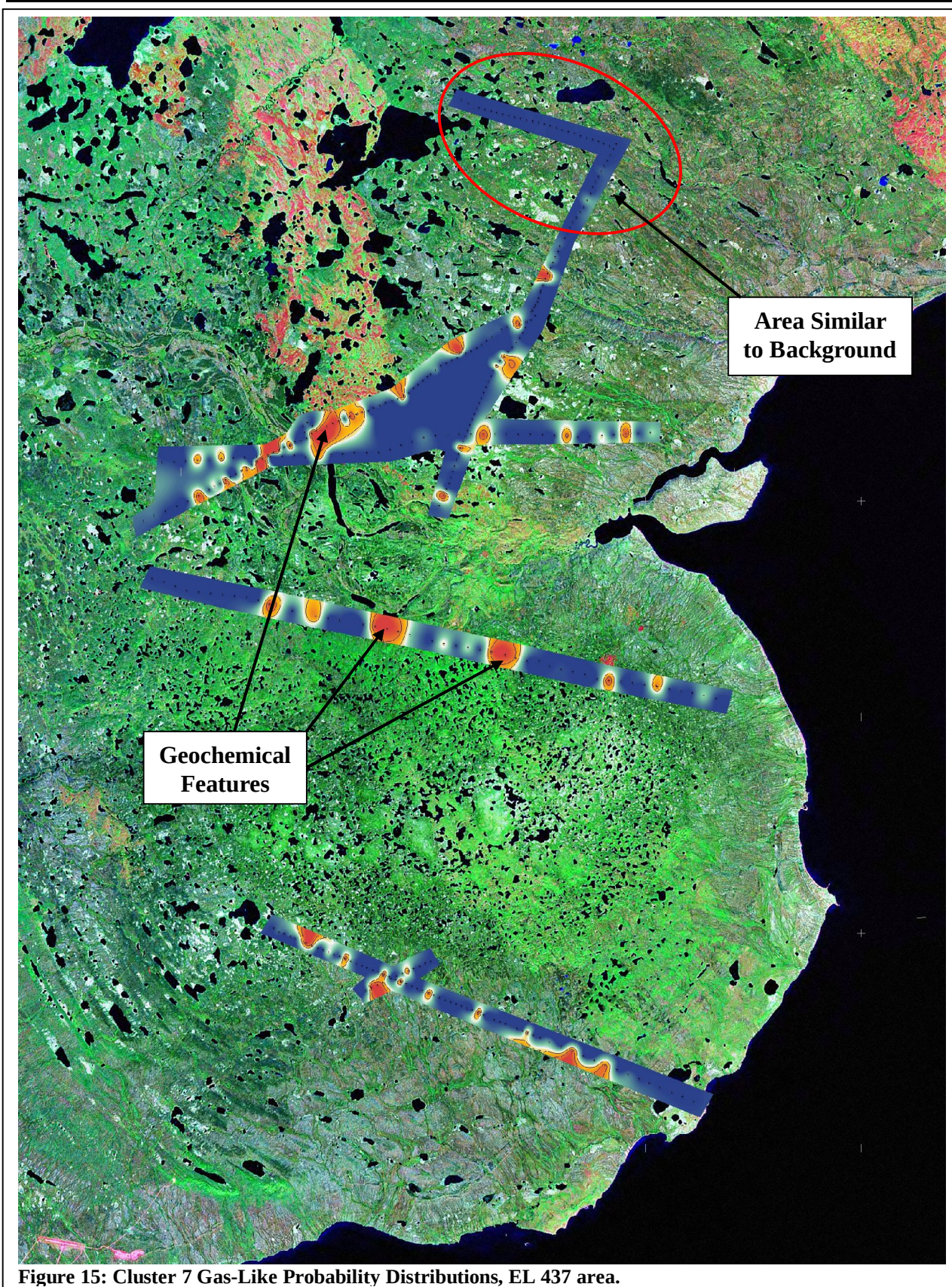


Figure 14: Cluster 13 Gas-Like Probability Distributions, EL 437 area.



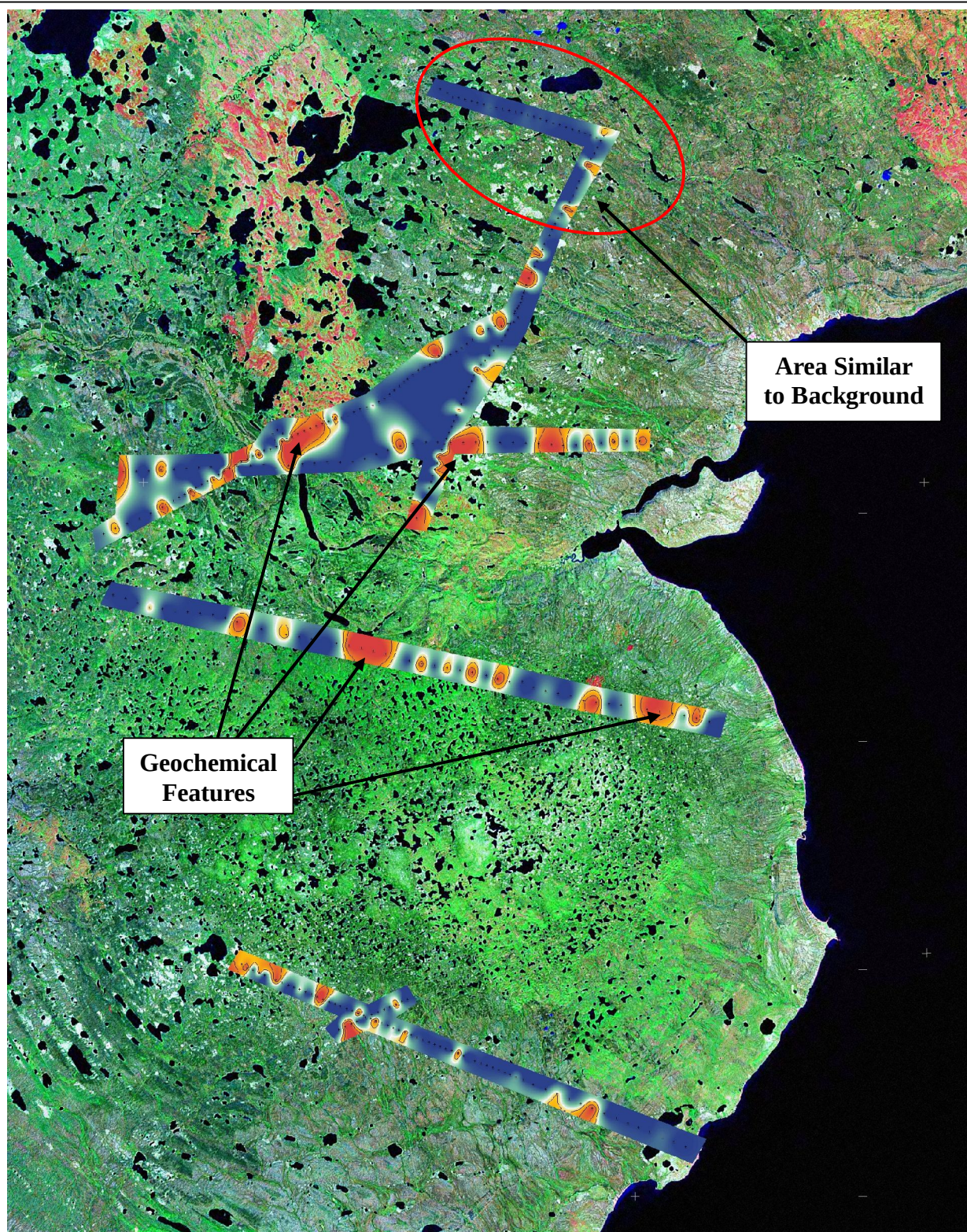


Figure 16: Combined Clusters 7 and 13 Gas-Like Probability Distributions, EL 437 area.

7.0 SUMMARY & CONCLUSIONS

The results of the GORE™ Survey for Exploration over an area identified as Great Bear Plains in the Northwest Territories in Canada are summarized below:

The purpose of the surface geochemical survey was to determine the probability of significant hydrocarbon accumulations structurally trapped in the Cambrian Mount Clark formation on Exploration License 437 in the Great Bear Plains area of the Northwest Territories of Canada based on modeled accumulations in the Colville Hills area.

Preprocessing of raw chemical output for all sample classes indicated the samples had acquired valid field signal, unrelated to sampler manufacturing, field transit or laboratory analytical conditions and the data were therefore fit for use in evaluating hydrocarbon prospectivity in the Great Bear Plains survey area.

For this project, both a “supervised” and an “unsupervised” modeling approach was adopted using a combination of PCA, LDA and HCA processing techniques.

The following models were developed:

Tweed Lake M47 Gas Model

All samples from the Tweed Lake M47 gas well were used to define the general character of gas reservoir emanation at the surface. Similarly, all samples from the Tweed Lake C12 and Losh Lake dry wells were used to define “background” emanation character.

Cluster 13 Gas Model

The signature for Cluster 13 consisted primarily of light aliphatic hydrocarbons in the C₂ to C₇ range and therefore all samples from Cluster 13 were used to define the general character of gas emanation at the surface. Fourteen samples from the Losh Lake dry well were used to define “background” emanation character.

Cluster 7 Gas Model

The signature for Cluster 7 consisted primarily of light aliphatic hydrocarbons in the C₂ to C₆ range plus normal alkanes in the C₉ to C₁₅ range similar to those found at the Tweed Lake M47 well. Therefore all samples from Cluster 7 were used to define the general character of gas/condensate emanation at the surface. Fourteen samples from the Losh Lake dry well were used to define “background” emanation character.

Combined Clusters 7 and 13 Gas Model

All samples from Clusters 7 and 13 were used to define the general character of gas emanation at the surface. Fourteen samples from the Losh Lake dry well were used to define “background” emanation character.

The models were developed using the end-member sample sets to collectively define their respective “gas-like” and “background-like” emanation signatures in two-way discriminant analysis. This process produces a statistical separation of the end members, defining which principal component factors best discriminate or separate the centroids of the defined classes.

The results for the Tweed lake M47 gas-like model in Colville Hills identified a geochemical feature at least 3.5 kilometers long along the transect over the Tweed Lake field. The geochemical feature truncates along the transect 1.5 kilometers northeast of the Tweed Lake M47 gas well and appears to closely correlate with the Mt. Clark reservoir for Tweed Lake. In addition this model identified several potential large geochemical features in the EL 437 survey area which is located two hundred kilometers to the southeast.

The results for the various Cluster gas-like models detected several geochemical features which appear to correspond with the geochemical features for the Tweed Lake M47 gas-like model. This correlation is understandable since the signatures of the Cluster 7 samples and Tweed Lake M47 samples are very similar. It also indicates that the Tweed Lake M47 well in Colville Hills, although 200 kilometers away, is most likely a valid model for the Great Bear Plains area.

In summary, these results indicate the following:

- The survey identified strong indications of gas with liquids in the central portion of the EL 437 survey area similar to the hydrocarbons modeled in the Mt. Clark formation at the Tweed Lake M47 well.
- The samples on the northern most transect and southern most transect in EL 437 are similar to background as defined by the Losh Lake well and indicates a very low probability of reservoired hydrocarbons. Additional work in these areas is not recommended.
- The model based on the Tweed Lake M47 well is a valid geochemical model for gas with liquids and is chemically similar to one of the models developed from the “unsupervised” cluster analysis of the data from EL 437.
- The Tweed Lake M47 model is a valid model for the EL 437 survey area even though it is located 200 kilometers away.
- Additional sampling is required to determine the aerial extents of the geochemical features in the central portion of EL 437 area. This is highly recommended.
- This survey data can be integrated with future GORE Surveys in the same area if additional sampling is performed.

Geochemical features detected in this survey can be related to the formation(s) of interest or possibly to either shallower or deeper formations in the Great Bear basin that contain hydrocarbons. Therefore, realistic appraisal of the model result, in the context of its utility for exploration activity in this part of Canada, will require an integrated analysis of available seismic data and rigorous geological interpretation by TALISMAN. Clearly, the extent to which the results of this geochemical survey assist further exploration efforts depends to a large degree on the quality and confidence in other exploration and geological control data with which it will be integrated.

APPENDIX A

1. Model Probability Values Summary



Probability Values for
Models.xls

[link to electronic file:]

APPENDIX B

The GORE Survey for Exploration Surface Geochemical Sampling System

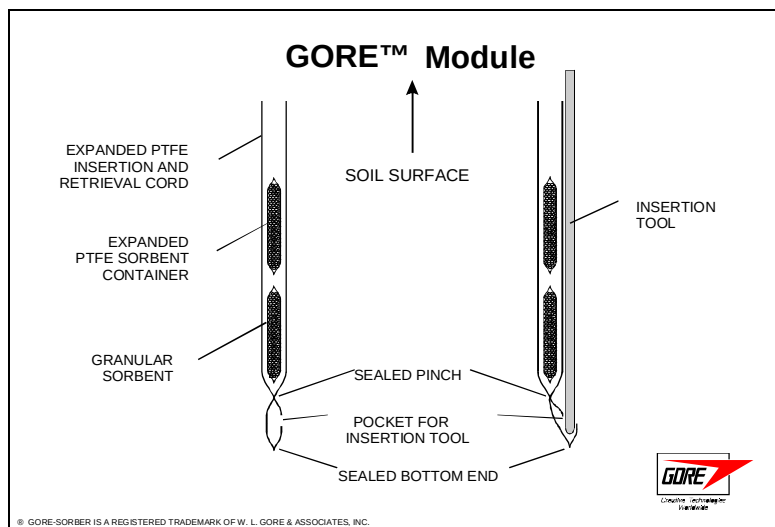
Exploration Survey Applications

The GORE™ Surveys For Petroleum Exploration method is an advanced surface geochemical prospecting tool capable of detecting and quantifying many organic compounds up through phytane. This geochemical sampling system employs the GORE™ Module (patented passive soil vapor sampling device), state-of-the-art chemical analysis and sophisticated statistical geochemical pattern recognition and has evolved from over fifteen years of experience in soil gas geochemical exploration and analytical chemistry. It is capable of differentiating reservoir hydrocarbons from “background” hydrocarbons (emanating from vegetation, shallow pollution, source rock, etc.).

Typical applications of this technique include: 1) Frontier - to determine hydrocarbon potential over large previously unexplored areas; 2) Exploration - focus geophysical efforts, prioritize leads or investigate stratigraphic traps; 3) Development - define the areal extent of producing fields and locate potential areas for secondary recovery. Prudent use and integration of the geochemical results can have significant benefits to the success of an exploration program, resulting in fewer dry holes.

Description of GORE Module Sampling Device

Each GORE Module contains a minimum of two (duplicate) samples and consists of several separate passive sorbent collection units called sorbers. Each sorber contains an equal amount of engineered sorbent materials, specifically selected for their affinity to a broad range of volatile organic compounds and semi-volatile organic compounds (VOCs and SVOCs), while minimizing uptake of water vapor (the principal soil gas constituent in most areas). The sorbers are sheathed in the bottom of a vapor-permeable retrieval cord looped at the top. The loop is used as a means of tying the module to a string for installation and retrieval. The figure below shows a typical GORE Module. The retrieval cord and the sorbent containers (sorbers) are constructed of an inert, hydrophobic, microporous expanded polytetrafluoroethene (ePTFE) membrane. The microporous structure of the membrane allows vapors to move freely across the membrane and onto the sorbent material. The microporous structure also protects the granular adsorbents from physical contact with soil particulates and water ensuring a consistent mechanism for collection of organic compounds (vapor-phase transfer only). The GORE Module is installed to a depth of one to two feet (30 to 60 centimeters) by creating a small pilot hole using a narrow steel rod or similar tool (a long screwdriver works well) and inserting the sampler manually using a narrow insertion tool provided by GORE. The sampler is retrieved by hand and returned to GORE for analysis and data processing.



The unique ability to protect the sorbent media from contact with ground and soil pore water without retarding soil vapor diffusion facilitates the application of the GORE Surveys for Petroleum Exploration method in very low permeability and poorly drained soils and swamp areas.

Quality Assurance (QA) Measures

As standard practice, all modules are individually numbered and tracked throughout the entire manufacturing, field deployment, and analytical process. Completed modules are sealed into clean glass vials, and stored under zero grade air until shipment to the customer. Cleanliness is verified by testing a select number of modules from each manufacturing lot. Prior to shipment, ten inventory blanks are randomly selected and set aside as controls to be analyzed along with returned modules. All modules are transported to and from the customer's site in sealed glass vials and boxes supplied by GORE. Five to ten additional trip blanks are provided to accompany the modules to and from the site for QA/QC purposes. Upon receipt, returned modules along with associated inventory blanks and trip blanks are randomized to minimize analytical biases.

Geochemical Survey Design

Prior to initiating a survey, specific survey objectives are established with the client and an appropriate sampling scheme and modeling strategy are identified. Information relating to target size and type, any preferred reservoir orientation characteristics, such as a channel sand, and the existence of analogous production and specific well characteristics and production history are important factors in developing an appropriate survey design. Of paramount importance are the decisions expected to be made based on the geochemical results. The survey design must be

sufficient to support or minimize the uncertainty of decisions affecting the “next step” in the exploration program.

Sampling plans typically follow a grid pattern with regular or variable spacing of samplers, sampling traverses, or a combination of both. Sample spacing generally ranges from 300 meters to one kilometer. Appropriate wells are selected for the purpose of modeling surface geochemical character over analogous production and dry/background areas.

Exploration Survey Installation and Retrieval Procedures

Installation of the modules is performed either by experienced subcontract field personnel or by the customer. The GORE Module is installed to an average depth of one to two feet (30 to 60 cm) below grade by driving a narrow (1cm diameter) pilot hole with a narrow steel tool (such as a long screwdriver) and a mallet, if necessary.

After the pilot hole is completed, modules are tied to a section of cord and inserted into the completed boreholes, using the stainless steel insertion rod supplied by GORE. The cord is secured at the ground surface by collapsing the hole. The location of the sample is marked on a map and location coordinates are secured where possible with a global positioning system (GPS) receiver, preferably equipped with a buffer for data storage and subsequent download to a personal computer. Additional modules that are designated as trip blanks should be noted on the installation/retrieval log and left (unopened) in the shipping box for the duration of the field exposure.

Module retrieval requires that field personnel locate the retrieval cord and manually pull the module from each location. The cord is separated from the module and discarded properly. The exposed modules are resealed in their respective designated shipping vials and placed in the supplied shipping box. Boxes with field-exposed modules and trip blanks are returned along with the Chain-of-Custody (COC) form to GORE's laboratory in Elkton, Maryland in the United States, usually via overnight courier.

Module Exposure Time

GORE's suggested target time for module exposure in the ground is 17 days. This time period has been evaluated over the course of thousands of surveys and has been found to be optimal for most regions and climatic conditions. However, this period is at times modified to accommodate special site conditions such as excessive rainfall, extreme cold, etc.

Analytical Procedures

All GORE Surveys for Petroleum Exploration samplers are inspected upon receipt at the GORE laboratory. Among the conditions checked are sampler container seal integrity, condition of the samplers, and proper sequence of sampler numbers. Samples are then transferred to a temporary storage location until analysis.

Each GORE Module contains a minimum of two duplicate samples, which are available for analysis. One sample is extracted from the GORE Module prior to analysis by cutting the bottom of the retrieval cord. The duplicate samples remain in sample storage until discarded. All soil gas samples are analyzed by thermal desorption followed by gas chromatographic separation and mass selective detection (TD/GC/MS). The laboratory analytical method has been developed by GORE specifically for application with petroleum geochemical exploration and yields chemical data for a wide variety of organic (including thermogenic) compounds up through C₂₀ (phytane).

Before each analytical run sequence, a system flush (an empty thermal desorption tube), a sampler exposed to BFB (bromofluorobenzene), a method blank, calibration standards, and an instrument blank are analyzed. Method blanks, calibration standards, and instrument blanks are analyzed at the beginning, middle, and end of the run sequence. QC samples are evaluated according to set criteria to ensure proper system performance. If after review the system is found out of control, appropriate actions are taken, and the replicate samples are analyzed. Compound identification is based on the presence of appropriate target compound mass fragments within a specific retention-time window, as determined through use of reference standards.

Trip blank samples, which are shipped with the survey modules and are selected at random by field personnel, are also analyzed. Prior to data processing, trip blank, method blank, inventory blanks and instrument blank data are reviewed to identify potential ambient exposures, or laboratory conditions, which may affect data quality.

GORE's laboratory operates under the guidelines of its "Quality Assurance Manual, Operating Procedures and Methods".

Data Processing and Modeling

The GORE Surveys for Petroleum Exploration incorporates sophisticated statistical processing and modeling of the complex geochemical signatures (up through phytane) obtained for each sample. Some of the processes used include hierarchical cluster analysis and discriminant analysis.

Hierarchical Cluster Analysis

Hierarchical cluster analysis (HCA) is often called an "unsupervised" multivariate technique, since no additional information other than the data itself is required to perform the operation. That is, it is not necessary to identify "end-members" of the data or qualify the data in any manner in order to perform subsequent comparison or evaluation of the data, as is the case with multivariate classification techniques. HCA proceeds by grouping samples of like composition according to the values of all input variables. The result is a list of subsets of samples of the data, which are alike (forming "clusters" of similar samples). Since the input variables of the data are in the form of hydrocarbon compound intensities, the clusters are subsets of chemically similar samples. The HCA method is used to determine the structure of a set of data when no other geological or geophysical information for the prospect is available. The results of HCA may be used to further classify the samples of the data (i.e.; whether particular samples show petroleum hydrocarbon influence).

Principal Components Analysis

Principal components analysis (PCA) is a data processing technique which is used to transform a set of data from measured variable space into components space. The measured variables are for target organic compound response values, and it is understood that many of the various compound recordings for this geochemical method are correlated: as the amount of one compound varies, so will vary one or more other measured compounds. The components derived through PCA are by definition not correlated so that, viewing the components as coordinate axes in a data space, the components are orthogonal. With n measured variables as input to PCA, n components are calculated. By definition, the orientation of the components is determined by the primary variance orientation in n -space. Hence component “1” is oriented along the prime variance of the data, component “2” is constrained to be orthogonal to component “1” and oriented along the next most variant direction, and so forth for the entire n component set. There are significant advantages offered by PCA, particularly for this form of data (surface geochemical measurements of volatile organic compounds). One has subsequently fewer data variables to process, without loss of information (recalling that many of the original measurement variables are correlated). Also, the components are linear combinations of the original measurement variables and are more akin to geochemical influences, being mixtures of numerous compounds. One further advantage to components is that they facilitate plotting the data, and hence allow easier evaluation of data trends and outlier identification.

Canonical Variates Analysis

Canonical variates analysis (CVA) is a data processing technique that is used to investigate the relationship between subsets of samples, as represented by the centroids of the sample subsets. The technique determines the orientation of the data space, such that the defined sample subsets are viewed as most separate. The separation between sample subsets is then expressed as a linear combination of measurement variables, and the relationships between subsets can be evaluated more efficiently. Given a data matrix of n variables, and m subsets of samples, this technique will derive minimum of $(m-1, n)$ canonical variates. In practice, we use CVA to evaluate whether there is reasonable separation between subsets of samples in the chemical measurement space. Typically, the input sample subsets comprise various blank sample classes and the samples deployed across a survey area. If distinct separation is noted between field samples as a class, and blank samples, then one can be reasonably assured that the field sample data is meaningful (in the sense that it is not “manufactured” signal).

Discriminant Analysis

Discriminant analysis (DA) is a multivariate data classification technique. At least two subsets of input samples must be identified as belonging to separate groups (with any such “group” of samples presumably representative of a particular physical influence in the sampled environment). The DA technique will then find the best separation of the groups in a minimum residual sense, in terms of the input variables for the samples. Since the input variables are of a chemical nature, the separation of the sample groups is expressed as a chemical difference between the groups. The classification of samples of unknown influence is then performed; each unknown sample is compared to the identified groups of samples and a probability of match to each sample group is

calculated. Therefore, if a group of samples is identified as petroleum-influenced, and another group of samples is identified as being like geochemical background, DA will statistically describe the difference between these two groups. The comparison of unknown samples to these two groups will yield for each unknown sample a probability of being like the petroleum influence, as well as a probability of being like the geochemical background influence.

Contour Maps of Geochemical Probabilities

The results of a GORE Survey for Petroleum Exploration are expressed in terms of probability that a given grid sample exhibits the surface geochemical character associated with known reservoir hydrocarbon accumulations, as defined by model set samples placed around analogous production wells and dry or background wells. Derived model probability values are contoured and may include other ecological structural information provided by the customer. Either minimum surface curvature or kriging models are employed. Typical map plot sizes range from “B-sized” (11” x 17”) to “E-size” (24” x 36”). The electronic site plan base map(s) provided by the customer should include a scaled drawing (with relevant site features), digitized in ground coordinates (UTM, State plane, etc). Map projection information should also be included.

Reporting of Results

The results of the GORE Survey for Petroleum Exploration are summarized in a report, which includes a review of survey objectives, design, modeling information and results. Field summary documentation, grid sample model probability summary table, and color contour maps of petroleum-like probability distribution (compared to the model) are also included.

Interpretation and Integration of Petroleum Exploration Survey Results

Survey results should always be integrated with other geological or geophysical information to prioritize areas for further exploration.

In reviewing the results of a specific survey the following factors should be considered:

Fault Zones: Greater emanation of hydrocarbons is generally associated with fault zones. Additionally the geochemical signature of emanations along a fault zone will differ from that of the geochemical model developed over a reservoir. Thus, near surface free petroleum associated with fault zone seepage would not be expected to correlate to or appear anomalous with respect to a model developed over a reservoir accumulation.

Correlation with Structures: A geochemical anomaly map is a surface plan view of the distribution of all contributing analogous petroliferous geochemical influences throughout the stratigraphic column. The detected anomalies may correlate with structural traps on one or more horizons, or with stratigraphic traps that have not been resolved with geophysical methods; similarly a potential target may be shown to be geochemically unprospective.

Contour Plots: The geochemical maps represent an objective computer-derived probability value surface interpolated from sample values. No effects or influences from the underlying geology (such as fault boundaries or other structures) are specifically accounted for in the contour interpolation. However, such boundary conditions or other geological features *should* impact the configuration of a geochemical anomaly. The exploration geoscientist is encouraged to independently hand contour the probability surface using his or her expert geological and geophysical knowledge of the prospect or region (integration of information).

Contour Uncertainty: Probability values are most accurate at the sampled locations. The contour surface developed between the data points is an estimate of the probability and is subject to uncertainty, which increases with distance from each sample location. Further resolution of the contoured surface may be appropriate through additional soil gas sampling depending on the end-use of the data.

APPENDIX C:

Field Documentation and Survey Sampler Information

1. GORE Sample Reconciliation Summary (by Module #)



Sample Reconcile.xls

[link to electronic file]

2. Field Documentation from PEREGRINE



Field Information.xls

[link to electronic file]

APPENDIX D:

Customer-Supplied Information

1. Project Information Form



GORE
ProjectInfoForm0611

2. Geologic Information



Tweed Lake M-47.tif

[link to electronic file]



North Tweed Lake
C-12.tif

[link to electronic file]



Tweed Lake A-67.tif

[link to electronic file]

PLATES

Plate 1: Tweed Lake M47 Gas-like Probability Distribution (Colville Hills Area)



GGX-Tweed Lake
M47 Colville Hills.pdf

[[link to electronic file](#)]

Plate 2: Tweed Lake M47 Gas-like Probability Distribution (EL 437 Area)



GGX-Tweed Lake
M47 El 437 area.pdf

[[link to electronic file](#)]

Plate 3: Cluster 13 Gas-like Probability Distribution



GGX-Cluster 13
model.pdf

[[link to electronic file](#)]

Plate 4: Cluster 7 Gas-like Probability Distribution



GGX-Cluster 7
Model.pdf

[[link to electronic file](#)]

Plate 5: Combined Cluster 7 & 13 Gas-like Probability Distribution



GGX-Cluster 7 and
13 Model.pdf

[[link to electronic file](#)]

Talisman Great Bear Plains Survey
Model Probability Values

Talisman Energy Inc.

13045661 EL437 NWT

Coordinates are UTM Zone 10 NAD 83 Datum

INDEX ID	MODULE #	Easting	Northing	Status	Cluster Group	Probability Value	Probability Value	Probability Value	Probability Value
						Model Tweed Lake M-47	Model Cluster 13	Model Cluster 7	Model Clusters 7 & 13
101	521630	489159	7244856	Grid	1	0	0	12	77
102	521502	488677	7245042	Grid	15	6	0	12	93
103	521938	489368	7244767	Grid	15	0	0	0	0
104	521706	488909	7244960	Grid	15	67	0	0	5
105	521574	488463	7245195	Grid	1	0	0	0	61
106	521557	490986	7244107	Grid	1	0	0	4	5
107	521882	491687	7243819	Grid	6	95	0	23	100
108	521449	491921	7243719	Grid	15	1	0	0	3
109	521454	492614	7243435	Grid	17	0	0	0	0
110	521993	491436	7243923	Grid	6	8	0	100	100
111	521487	490307	7244381	Grid	17	0	0	0	0
112	521396	490052	7244483	Grid	17	0	0	75	36
113	521625	492150	7243625	Grid	15	19	0	1	9
114	521531	491225	7244012	Grid	17	0	0	0	0
115	521932	490526	7244290	Grid	17	0	0	1	0
116	521538	490749	7244201	Grid	1	0	2	60	58
117	521290	492828	7243350	Grid	15	4	0	0	0
118	521431	492364	7243541	Grid	15	92	0	0	1
119	521985	489822	7244584	Grid	15	0	0	99	99
120	521644	493293	7243163	Grid	1	0	0	6	24
121	521620	498146	7241209	Grid	15	0	0	0	0
122	521693	494231	7242780	Grid	15	97	0	0	0
123	521482	496300	7241954	Grid	15	0	0	0	0
124	521303	496084	7242036	Grid	15	0	0	0	0
125	521641	498624	7241016	Grid	15	0	0	0	0
126	521770	495860	7242116	Grid	15	0	0	0	1
127	521547	493759	7242972	Grid	17	0	0	98	90
128	521897	499067	7240834	Grid	17	0	0	76	3
129	521708	495618	7242212	Grid	17	0	0	0	0
130	521714	497902	7241297	Grid	15	0	0	0	1
131	521432	495383	7242313	Grid	15	100	0	0	13
132	521698	493059	7243251	Grid	7	0	0	100	96
133	521267	494683	7242596	Grid	17	0	0	1	0
134	521564	498385	7241117	Grid	15	7	0	0	0
135	521507	497006	7241690	Grid	7	0	0	100	94
136	521463	494914	7242504	Grid	1	1	0	91	86
137	521859	498858	7240923	Grid	17	0	0	2	0

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ID	MODULE #	Easting	Northing	Status	Cluster Group	Model Tweed Lake M-47	Model Cluster 13	Model Cluster 7	Model Clusters 7 & 13
138	521260	497667	7241377	Grid	15	0	0	0	1
139	521442	497234	7241585	Grid	15	0	0	0	0
140	521737	495153	7242404	Grid	17	0	0	31	2
141	521348	496525	7241862	Grid	15	0	0	0	0
142	521393	494464	7242688	Grid	15	5	0	1	56
143	521611	496767	7241787	Grid	17	0	0	0	0
144	521582	493995	7242880	Grid	15	69	0	0	29
145	521337	493553	7243059	Grid	15	0	0	1	40
146	521900	503265	7239102	Grid	17	15	0	15	0
147	521981	502312	7239495	Grid	1	87	0	86	99
148	521580	500461	7240258	Grid	15	100	0	1	2
149	521650	501392	7239873	Grid	15	0	0	0	8
150	521569	505086	7238350	Grid	15	99	0	0	13
151	522013	506000	7237977	Grid	15	87	0	0	0
152	522009	504141	7238740	Grid	15	0	0	2	1
153	521870	501851	7239681	Grid	15	100	0	16	36
154	521551	502791	7239294	Grid	15	96	0	1	7
155	521887	499588	7240625	Grid	15	1	0	0	0
156	521929	503717	7238914	Grid	15	0	0	0	0
157	521689	500921	7240068	Grid	17	0	0	94	61
158	521874	505525	7238174	Grid	17	0	0	0	0
159	521752	499984	7240452	Grid	17	41	0	25	0
160	521803	499300	7240734	Grid	15	1	0	0	28
161	521281	504577	7238563	Grid	15	42	0	0	1
162	521288	485328	7259214	Grid	15	0	0	0	1
163	521903	489249	7258428	Grid	17	0	0	0	0
164	521387	484353	7259460	Grid	17	0	0	0	0
165	521808	490724	7258117	Grid	15	100	0	0	0
166	521294	483383	7259780	Grid	15	0	0	0	0
167	521885	485825	7259161	Grid	15	10	0	0	0
168	521261	486826	7259050	Grid	15	0	0	0	0
169	521600	490218	7258202	Grid	7	0	0	81	69
170	521883	487817	7258872	Grid	15	82	0	0	0
171	521627	484826	7259280	Grid	8	0	100	0	60
172	521272	487325	7258994	Grid	15	0	0	0	0
173	521832	486328	7259105	Grid	15	40	0	0	0
174	521961	483872	7259648	Grid	15	0	0	0	0
175	521423	487245	7264830	Grid	15	0	0	0	1
176	521268	488814	7264883	Grid	11	0	0	2	0
177	521428	489321	7264903	Grid	15	0	0	0	0
178	521382	492848	7265033	Grid	15	0	0	0	1

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179	521606	484782	7264669	Grid	17	4	1	0	1
180	521257	491341	7264979	Grid	15	75	0	0	0
181	521849	487747	7264850	Grid	15	0	0	0	0
182	521478	490303	7264880	Grid	7	0	0	77	98
183	521810	484291	7264661	Grid	17	1	3	0	6
184	521347	489790	7264845	Grid	1	0	0	0	13
185	521613	490860	7264939	Grid	15	100	0	0	0
186	521975	493775	7265337	Grid	15	95	0	0	1
187	521778	492353	7265021	Grid	15	99	0	0	0
188	521520	485277	7264701	Grid	17	0	0	80	92
189	521755	483781	7264648	Grid	15	98	0	4	96
190	521667	485783	7264743	Grid	17	0	1	0	0
191	521486	486763	7264814	Grid	17	0	3	1	0
192	521842	491839	7265031	Grid	15	89	0	0	0
193	521573	493325	7265153	Grid	15	21	0	0	6
194	521982	486274	7264780	Grid	4	93	0	74	0
195	521302	488307	7264868	Grid	17	0	0	1	8
196	521469	492694	7257785	Grid	13	91	100	99	100
197	521366	494724	7265663	Grid	15	100	0	16	99
198	521553	496204	7265813	Grid	15	99	0	0	1
199	521453	496701	7265792	Grid	15	100	3	18	100
200	521527	493656	7257565	Grid	13	70	100	90	100
201	521692	493198	7257686	Grid	9	63	100	100	100
202	521636	498177	7265806	Grid	15	8	0	1	37
203	521661	491229	7258032	Grid	15	0	0	0	7
204	521656	492201	7257863	Grid	15	97	0	0	12
205	521818	497708	7265807	Grid	15	100	15	25	96
206	521335	494236	7265495	Grid	15	0	0	0	0
207	521331	495225	7265747	Grid	15	0	0	0	1
208	521754	497209	7265790	Grid	13	79	100	99	100
209	521889	494143	7257443	Grid	15	100	31	40	99
210	521986	488277	7258709	Grid	13	100	100	98	100
211	521614	495741	7265817	Grid	15	90	0	0	5
212	521637	499995	7256119	Grid	15	0	0	0	0
213	521447	499187	7265785	Grid	15	0	0	0	0
214	521477	499043	7256342	Grid	1	0	0	1	42
215	521433	498571	7256467	Grid	13	50	100	77	100
216	521536	498676	7265799	Grid	15	0	0	0	0
217	521787	502674	7265771	Grid	15	0	0	0	1
218	521838	500200	7265735	Grid	15	100	25	1	85
219	521680	501165	7265665	Grid	15	100	1	0	85

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220	522012	497572	7256712	Grid	13	100	100	91	100
221	521715	501671	7265686	Grid	15	0	0	0	0
222	521727	496567	7256901	Grid	3	0	0	47	78
223	521277	499692	7265776	Grid	15	90	0	0	4
224	521931	503180	7265805	Grid	17	95	100	99	88
225	521472	499554	7256353	Grid	15	100	0	0	0
226	521776	498133	7256592	Grid	11	100	0	100	0
227	521467	495089	7257176	Grid	15	100	0	0	0
228	521414	497077	7256808	Grid	15	78	0	0	11
229	521797	496074	7256986	Grid	15	19	0	1	0
230	521591	502175	7265737	Grid	13	93	100	56	100
231	521960	495577	7257061	Grid	15	64	0	57	90
232	521956	500704	7265700	Grid	13	96	100	90	100
233	521322	483466	7262401	Grid	15	0	0	12	75
234	521962	506927	7254775	Grid	15	19	0	0	2
235	521906	503686	7265836	Grid	15	58	0	0	7
236	521749	502968	7255477	Grid	15	73	0	0	3
237	521771	503961	7255346	Grid	15	0	0	5	56
238	521320	483936	7262597	Grid	15	98	0	0	1
239	521360	503454	7255423	Grid	15	0	0	3	16
240	521764	485776	7263489	Grid	1	1	0	3	13
241	521934	500470	7255984	Grid	15	1	0	4	29
242	521276	500959	7255885	Grid	15	4	0	0	0
243	521596	505953	7255006	Grid	15	78	0	0	28
244	521748	502461	7255529	Grid	18	0	100	99	100
245	521844	504474	7255263	Grid	17	90	94	83	97
246	521468	484409	7262797	Grid	15	92	0	0	0
247	521628	485331	7263228	Grid	7	0	2	100	100
248	521643	483008	7262180	Grid	15	0	0	10	20
249	521408	505473	7255091	Grid	15	100	1	3	78
250	521439	504981	7255170	Grid	15	98	0	2	92
251	521738	484870	7262992	Grid	15	0	0	0	0
252	521946	501458	7255777	Grid	15	2	0	0	0
253	521963	504199	7265861	Grid	15	81	0	41	88
254	521380	501971	7255595	Grid	15	89	0	0	74
255	522007	506434	7254902	Grid	12	100	14	41	100
256	521512	496181	7264986	Grid	15	0	0	0	0
257	521473	496848	7266643	Grid	15	13	0	0	3
258	521292	488216	7264907	Grid	1	0	87	100	99
259	521352	487544	7264524	Grid	15	0	0	0	0
260	521774	495682	7263507	Grid	17	0	0	2	4

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ID	MODULE #	Easting	Northing	Status	Cluster Group	Model Tweed Lake M-47	Model Cluster 13	Model Cluster 7	Model Clusters 7 & 13
261	521270	489589	7265518	Grid	17	0	100	6	34
262	521687	488677	7265134	Grid	17	0	2	97	100
263	521401	495940	7264237	Grid	15	0	0	0	2
264	521697	495577	7263251	Grid	7	0	0	100	100
265	521930	497137	7267306	Grid	19	90	100	0	0
266	521413	497040	7267088	Grid	1	0	0	1	73
267	521726	488446	7265022	Grid	17	1	100	77	65
268	521856	485995	7263621	Grid	15	0	0	60	14
269	521798	496752	7266417	Grid	17	0	100	0	0
270	521969	496257	7265223	Grid	1	0	0	96	100
271	521772	496369	7265498	Grid	15	0	0	0	1
272	521519	486886	7264135	Grid	15	0	0	0	2
273	521604	489861	7266287	Grid	17	0	100	15	1
274	521325	489674	7266122	Grid	15	4	0	0	12
275	521621	486440	7263873	Grid	15	100	95	99	99
276	521421	496947	7266872	Grid	15	2	0	0	0
277	521338	496552	7265939	Grid	15	24	0	0	0
278	521886	487325	7264393	Grid	17	17	100	79	82
279	521601	496105	7264740	Grid	15	12	0	2	74
280	521456	487107	7264266	Grid	15	0	0	54	29
281	521266	490082	7266154	Grid	15	99	0	0	0
282	521777	488900	7265244	Grid	15	3	0	0	14
283	521444	487985	7264782	Grid	17	1	100	99	90
284	521646	495362	7262805	Grid	15	7	0	10	95
285	521559	489842	7265628	Grid	17	0	100	8	6
286	521287	487766	7264653	Grid	17	11	100	100	98
287	521724	489146	7265322	Grid	15	37	59	99	100
288	521911	495787	7263740	Grid	15	1	0	0	1
289	521734	497235	7267530	Grid	15	100	0	0	0
290	521968	490240	7265950	Grid	15	98	99	79	27
291	521970	496463	7265720	Grid	17	4	100	0	0
292	521295	486207	7263736	Grid	15	78	0	0	0
293	521504	486652	7264016	Grid	15	4	0	0	0
294	521275	496016	7264471	Grid	17	9	0	12	0
295	521386	489771	7265874	Grid	15	77	0	6	0
296	521852	496657	7266185	Grid	15	100	0	0	0
297	521830	495866	7264000	Grid	15	100	0	0	42
298	521940	489341	7265473	Grid	15	87	0	0	0
299	521739	498972	7270251	Grid	15	0	0	0	0
300	521314	497751	7268666	Grid	1	1	0	71	92
301	521707	491650	7266531	Grid	7	0	0	100	100

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302	521283	498242	7269234	Grid	19	0	100	0	0
303	521558	499557	7271544	Grid	15	0	0	0	0
304	521555	491179	7266355	Grid	15	96	0	93	87
305	521651	497332	7267761	Grid	19	0	100	0	0
306	521511	493140	7267106	Grid	17	0	99	1	2
307	522005	498869	7270017	Grid	17	0	100	0	0
308	521265	492141	7266711	Grid	15	97	2	90	97
309	521364	492405	7266781	Grid	15	100	0	0	0
310	521575	499057	7270483	Grid	17	0	99	0	0
311	521807	490052	7265821	Grid	5	37	0	100	100
312	521594	498593	7269603	Grid	17	0	0	15	0
313	521543	497546	7268217	Grid	17	0	100	0	0
314	521598	491413	7266444	Grid	15	66	0	0	95
315	521474	497910	7268854	Grid	15	100	99	0	7
316	521535	490451	7266015	Grid	1	0	0	100	100
317	521443	499620	7271782	Grid	15	20	0	1	3
318	521394	499478	7271304	Grid	17	0	0	0	0
319	521339	493399	7267175	Grid	15	0	0	0	14
320	521343	499228	7270881	Grid	17	0	95	0	0
321	521732	499706	7272000	Grid	15	100	0	0	92
322	521670	498736	7269803	Grid	15	100	0	0	0
323	521602	492634	7266894	Grid	15	36	0	0	0
324	521792	492896	7266990	Grid	17	1	16	9	1
325	521618	497639	7268444	Grid	19	0	100	0	0
326	521381	498087	7269030	Grid	1	12	0	94	47
327	521873	490941	7266256	Grid	15	0	0	100	100
328	521664	499351	7271095	Grid	17	0	98	0	0
329	521665	498411	7269408	Grid	17	0	100	0	25
330	521898	490679	7266129	Grid	7	0	4	100	100
331	521855	497430	7267988	Grid	15	77	0	0	0
332	521802	491906	7266625	Grid	17	41	37	53	5
333	521488	494096	7267526	Grid	17	0	99	0	1
334	521279	495669	7268752	Grid	17	0	55	0	0
335	521642	500966	7274640	Grid	15	2	0	0	33
336	521669	494880	7268192	Grid	15	2	7	0	0
337	521362	500018	7272727	Grid	14	0	2	4	1
338	521722	500617	7273977	Grid	17	0	0	2	7
339	521286	496480	7269173	Grid	15	0	4	1	0
340	521705	499809	7272279	Grid	7	0	0	100	100
341	521255	500344	7273403	Grid	1	0	0	1	32
342	521991	494297	7267698	Grid	17	0	100	0	1

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343	521831	495891	7268869	Grid	1	98	0	2	4
344	521760	495012	7268302	Grid	17	0	2	4	0
345	521332	500131	7272959	Grid	17	0	1	21	1
346	521682	501110	7274838	Grid	17	0	0	0	1
348	521524	495435	7268646	Grid	15	96	2	1	10
349	521866	499911	7272504	Grid	15	99	3	97	100
350	521942	501256	7275046	Grid	15	3	0	7	96
351	521298	500217	7273185	Grid	17	0	0	20	97
352	521515	501544	7275550	Grid	14	0	0	31	0
353	521743	500728	7274205	Grid	15	0	0	0	4
354	521965	496226	7269214	Grid	7	4	0	100	99
355	521957	495210	7268469	Grid	17	89	53	25	0
356	521843	494689	7268030	Grid	15	100	0	0	0
357	521742	501409	7275281	Grid	15	63	0	1	1
358	521773	500831	7274429	Grid	15	100	0	1	3
359	521947	493883	7267392	Grid	17	99	0	98	0
360	521815	493642	7267271	Grid	15	96	0	34	57
361	521655	496125	7268980	Grid	15	57	3	3	1
362	521936	500424	7273634	Grid	1	0	0	12	5
363	521528	499610	7271709	Grid	15	0	0	1	0
364	521671	501911	7276337	Grid	15	0	0	0	1
365	521379	499407	7271169	Grid	17	0	0	0	0
366	521631	502268	7276991	Grid	15	88	0	0	0
367	521685	497357	7269687	Grid	15	100	0	0	0
368	521820	502513	7277438	Grid	15	9	0	0	3
369	521905	497979	7270154	Grid	15	92	0	6	78
370	521306	499391	7270740	Grid	8	0	100	0	1
371	521864	502246	7277918	Grid	1	2	0	0	3
372	521262	496715	7269266	Grid	15	83	0	1	0
373	521884	498969	7270490	Grid	17	46	100	0	49
374	521350	502142	7276761	Grid	1	0	0	10	99
375	521871	499524	7271461	Grid	15	9	1	0	4
376	521733	497153	7269534	Grid	17	0	100	2	4
377	521616	499217	7270557	Grid	15	11	0	0	1
378	521928	496948	7269384	Grid	15	99	0	0	0
379	521349	501786	7276099	Grid	15	62	0	0	1
380	521341	501703	7275831	Grid	15	0	0	0	8
381	521321	502764	7277904	Grid	14	1	10	0	60
382	521996	497572	7269847	Grid	17	0	94	6	0
383	521526	502483	7277833	Grid	14	0	2	0	35
384	521326	502392	7277209	Grid	17	56	11	0	4

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385	521539	502025	7276540	Grid	15	0	0	0	14
386	521766	499271	7270968	Grid	14	0	2	0	0
388	521652	502657	7277691	Grid	14	1	16	0	0
389	521503	498216	7270287	Grid	2	0	0	0	0
390	521759	498725	7270384	Grid	15	100	100	100	100
391	521567	500494	7278498	Grid	15	0	0	0	0
392	521545	496304	7279747	Grid	15	0	0	0	0
393	521914	501017	7278336	Grid	15	2	0	1	1
394	521972	497033	7279409	Grid	14	0	0	0	0
395	521795	500258	7278577	Grid	14	0	62	0	7
396	521510	499273	7278844	Grid	11	5	71	1	0
397	521455	497781	7279197	Grid	15	0	0	0	0
398	521694	501529	7278159	Grid	15	0	0	0	0
399	521967	501281	7278238	Grid	14	0	6	0	0
400	521713	498522	7279012	Grid	17	0	0	0	0
401	521367	496795	7279426	Grid	14	0	0	0	0
402	521833	496597	7279592	Grid	15	0	0	0	1
403	521679	502019	7277997	Grid	10	0	34	0	0
404	521593	498276	7279064	Grid	14	1	29	0	10
405	521300	499773	7278735	Grid	15	3	0	2	10
406	521649	501779	7278077	Grid	14	6	34	0	4
407	521415	499019	7278902	Grid	15	96	0	1	1
408	521896	498026	7279132	Grid	15	22	0	0	2
409	521841	498767	7278960	Grid	17	4	1	0	0
410	521462	499519	7278791	Grid	17	0	44	0	0
411	521973	497547	7279266	Grid	15	93	0	0	0
412	521327	500765	7278409	Grid	14	0	96	0	6
413	521388	500013	7278656	Grid	14	78	2	0	0
414	521619	497288	7279335	Grid	15	99	0	1	0
415	521493	495017	7243814	Grid	17	0	0	0	0
416	521654	493362	7243097	Grid	12	0	0	0	0
417	521441	494078	7243407	Grid	1	5	0	79	27
418	521788	492311	7242615	Grid	15	0	0	0	0
419	521514	493024	7242939	Grid	1	0	0	69	2
420	521425	494800	7243722	Grid	15	8	0	0	0
421	521994	492790	7242832	Grid	6	88	0	100	99
422	521571	493838	7243307	Grid	15	0	0	21	0
423	521812	494551	7243613	Grid	15	1	0	3	91
424	521784	493599	7243203	Grid	15	0	0	0	0
425	521311	492551	7242726	Grid	6	73	0	100	100
426	521588	494311	7243506	Grid	17	85	0	3	0

Talisman Great Bear Plains Survey
Model Probability Values

INDEX						Probability Value	Probability Value	Probability Value	Probability Value
ID	MODULE #	Easting	Northing	Status	Cluster Group	Model Tweed Lake M-47	Model Cluster 13	Model Cluster 7	Model Clusters 7 & 13
501	521533	371548	7427402	Grid	#N/A	90	#N/A	#N/A	#N/A
502	521385	372009	7427690	Grid	#N/A	100	#N/A	#N/A	#N/A
503	521617	372445	7427965	Grid	#N/A	92	#N/A	#N/A	#N/A
504	521546	372893	7428245	Grid	#N/A	100	#N/A	#N/A	#N/A
505	521634	373326	7428526	Grid	#N/A	66	#N/A	#N/A	#N/A
506	521763	373780	7428812	Grid	#N/A	95	#N/A	#N/A	#N/A
507	521953	374204	7429076	Grid	#N/A	96	#N/A	#N/A	#N/A
508	521806	374612	7429329	Grid	#N/A	0	#N/A	#N/A	#N/A
509	521768	374817	7429466	Grid	#N/A	75	#N/A	#N/A	#N/A
510	521438	375034	7429595	Grid	#N/A	54	#N/A	#N/A	#N/A
511	521259	375250	7429743	Grid	#N/A	0	#N/A	#N/A	#N/A
512	521376	375463	7429873	Grid	#N/A	36	#N/A	#N/A	#N/A
513	521976	375689	7430012	Grid	#N/A	6	#N/A	#N/A	#N/A
514	521945	375901	7430150	Grid	#N/A	70	#N/A	#N/A	#N/A
515	521789	376111	7430280	Grid	#N/A	7	#N/A	#N/A	#N/A
516	521299	376299	7430396	Grid	#N/A	3	#N/A	#N/A	#N/A
517	521346	376501	7430530	Grid	#N/A	0	#N/A	#N/A	#N/A
518	521548	376710	7430659	Grid	#N/A	0	#N/A	#N/A	#N/A
1001	521607	484849	7303834	Model	15	0	0	0	1
1002	521902	484880	7303779	Model	15	0	0	0	0
1003	521572	484869	7303793	Model	17	0	10	0	0
1004	521662	484929	7303760	Model	17	2	0	0	0
1005	521918	484851	7303889	Model	15	12	0	0	0
1006	521758	484956	7303781	Model	15	0	0	0	0
1007	521460	484858	7303818	Model	15	0	0	0	0
1008	521324	484978	7303815	Model	12	0	0	99	100
1009	521746	484849	7303871	Model	15	0	0	0	0
1010	521836	484945	7303764	Model	17	2	17	0	0
1011	521939	484893	7303768	Model	15	2	0	0	0
1012	521709	484852	7303851	Model	7	0	0	100	100
1013	521904	484969	7303798	Model	15	19	0	1	3
1014	521291	484910	7303759	Model	15	1	0	1	0
1015	521629	484863	7303803	Model	15	5	0	0	0
2001	521293	628260	7436359	Model	#N/A	0	#N/A	#N/A	#N/A
2002	521659	628462	7436359	Model	#N/A	0	#N/A	#N/A	#N/A
2003	521922	628267	7436340	Model	#N/A	49	#N/A	#N/A	#N/A
2004	521740	628439	7436318	Model	#N/A	78	#N/A	#N/A	#N/A
2005	521987	628290	7436386	Model	#N/A	0	#N/A	#N/A	#N/A
2006	521605	628451	7436332	Model	#N/A	15	#N/A	#N/A	#N/A
2007	521523	628386	7436268	Model	#N/A	94	#N/A	#N/A	#N/A
2008	521867	628316	7436290	Model	#N/A	0	#N/A	#N/A	#N/A

Talisman Great Bear Plains Survey
Model Probability Values

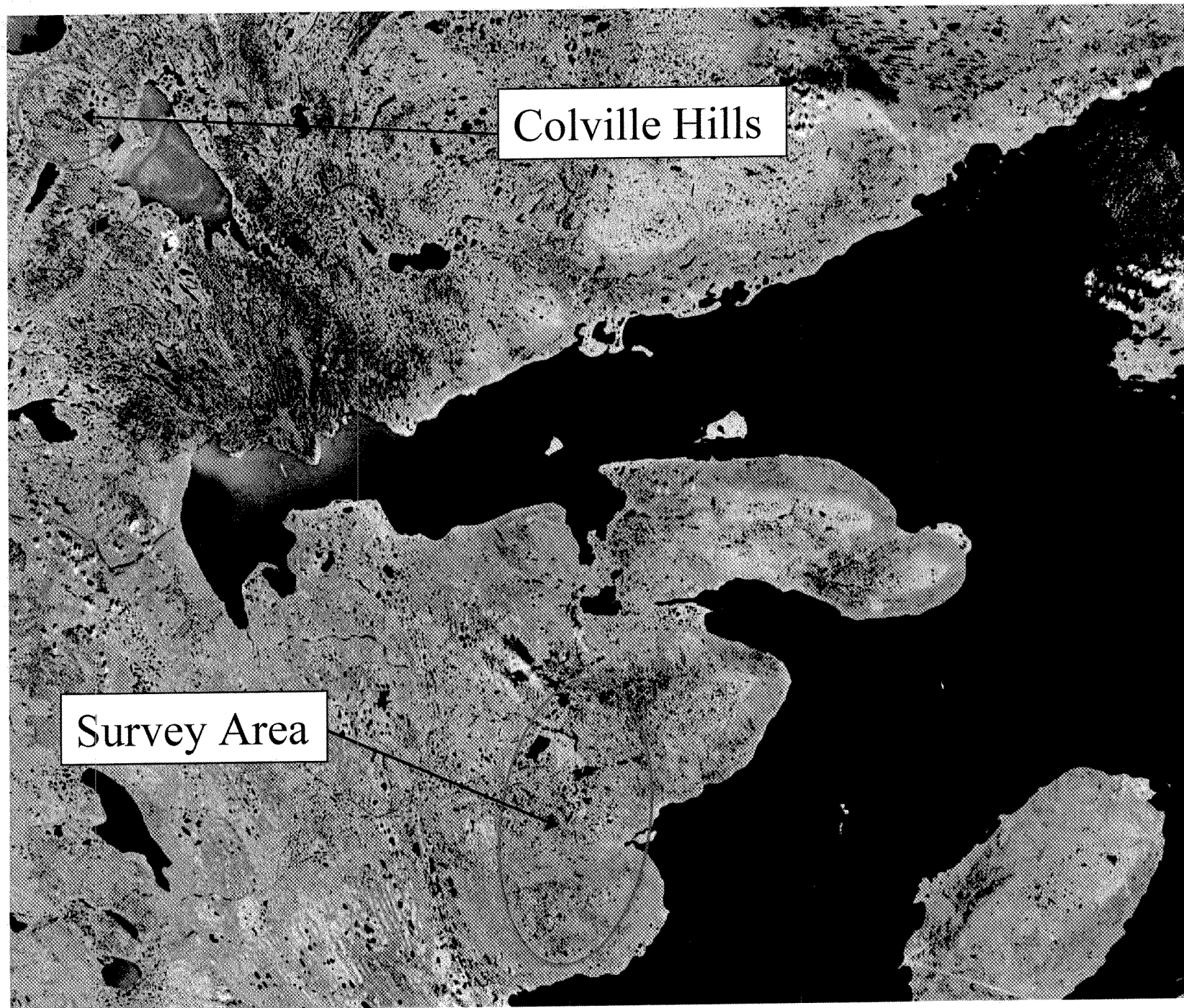
INDEX						Probability Value	Probability Value	Probability Value	Probability Value
ID	MODULE #	Easting	Northing	Status	Cluster Group	Model Tweed Lake M-47	Model Cluster 13	Model Cluster 7	Model Clusters 7 & 13
2009	521615	628418	7436281	Model	#N/A	0	#N/A	#N/A	#N/A
2010	521344	628359	7436262	Model	#N/A	1	#N/A	#N/A	#N/A
2011	521284	628312	7436402	Model	#N/A	1	#N/A	#N/A	#N/A
2012	521890	628289	7436323	Model	#N/A	5	#N/A	#N/A	#N/A
2013	521483	628330	7436277	Model	#N/A	2	#N/A	#N/A	#N/A
3001	521750	373009	7428422	Model	#N/A	90	#N/A	#N/A	#N/A
3002	521570	373189	7428345	Model	#N/A	81	#N/A	#N/A	#N/A
3003	521720	373086	7428282	Model	#N/A	99	#N/A	#N/A	#N/A
3004	521280	373130	7428306	Model	#N/A	73	#N/A	#N/A	#N/A
3005	521568	373008	7428410	Model	#N/A	100	#N/A	#N/A	#N/A
3006	521921	373195	7428387	Model	#N/A	28	#N/A	#N/A	#N/A
3007	521822	373171	7428335	Model	#N/A	100	#N/A	#N/A	#N/A
3008	521686	373186	7428398	Model	#N/A	32	#N/A	#N/A	#N/A
3010	522010	373108	7428294	Model	#N/A	81	#N/A	#N/A	#N/A
3011	521457	373208	7428366	Model	#N/A	71	#N/A	#N/A	#N/A
3012	521988	373148	7428318	Model	#N/A	98	#N/A	#N/A	#N/A
3013	521857	373032	7428359	Model	#N/A	82	#N/A	#N/A	#N/A
3014	521910	373072	7428299	Model	#N/A	100	#N/A	#N/A	#N/A
3015	521850	373202	7428351	Model	#N/A	100	#N/A	#N/A	#N/A
Losh Lake	Losh Lake			P&A	#N/A	0		0	0
Tweed Lake	Tweed Lake C12			P&A	#N/A	1	#N/A	#N/A	#N/A
Tweed Lake	Tweed Lake M47			GAS	#N/A	86	#N/A	#N/A	#N/A



GORE™ Surveys for Exploration

*“Amplified Geochemical
Imaging”*

Geochemical Results for:
Great Bear Plains Survey,
NWT



Colville Hills

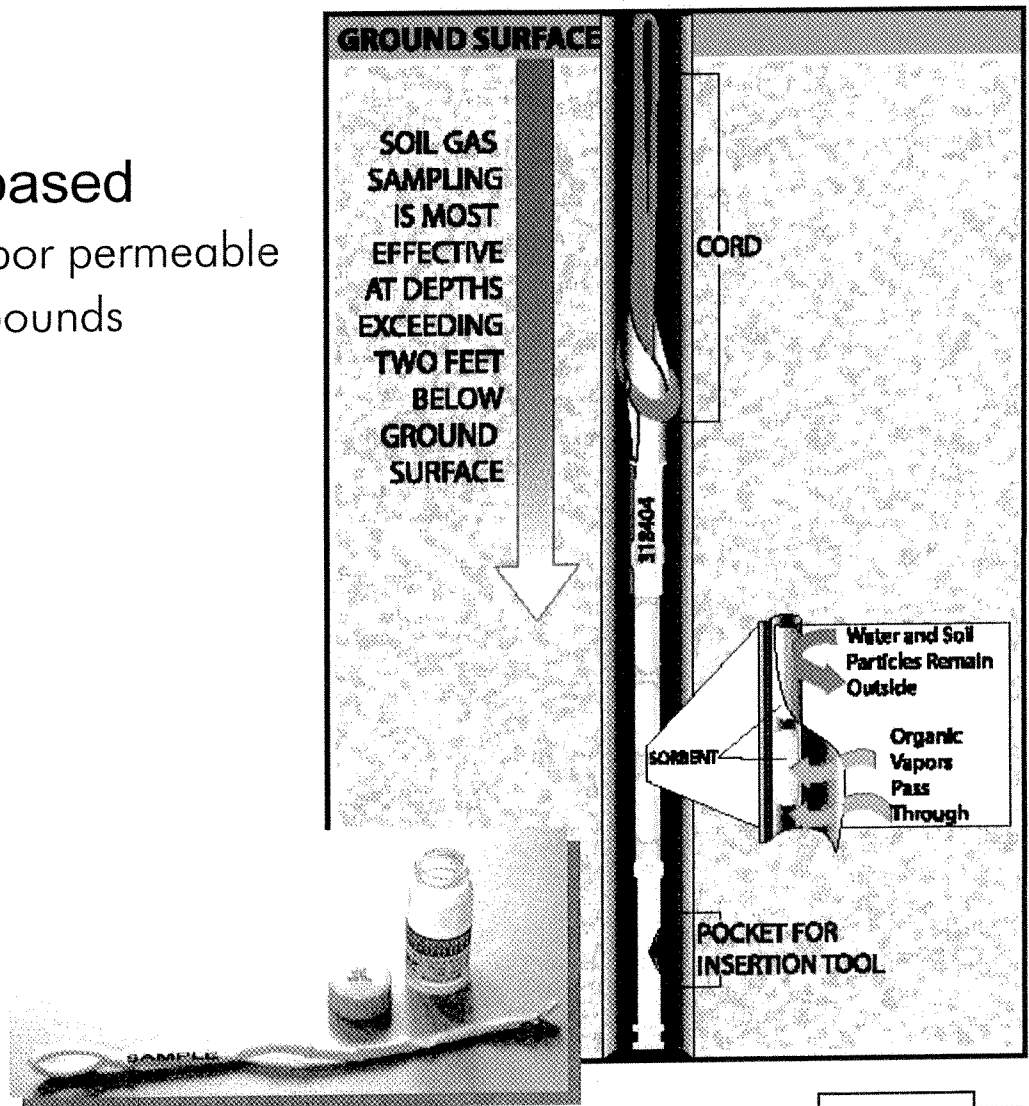
Survey Area

Survey Objective

- **Determine the probability of significant hydrocarbon accumulations structurally trapped in the Cambrian Mount Clark formation on Exploration License 437 in the Great Bear Plains area of the Northwest Territories of Canada based on modeled accumulations in the Colville Hills area.**

GORE™ Module

- Patented, passive, sorbent-based
 - Chemically-inert, waterproof, vapor permeable
 - Direct detection of organic compounds
 - Sample integrity protected
- Engineered sorbents
 - Consistent sampling medium
 - Minimal water vapor uptake
- Time-integrated sampling
 - Minimize near-surface variability
 - Maximize sensitivity (up to C20)
 - Avoids variables inherent in instantaneous sampling
- Duplicate samples

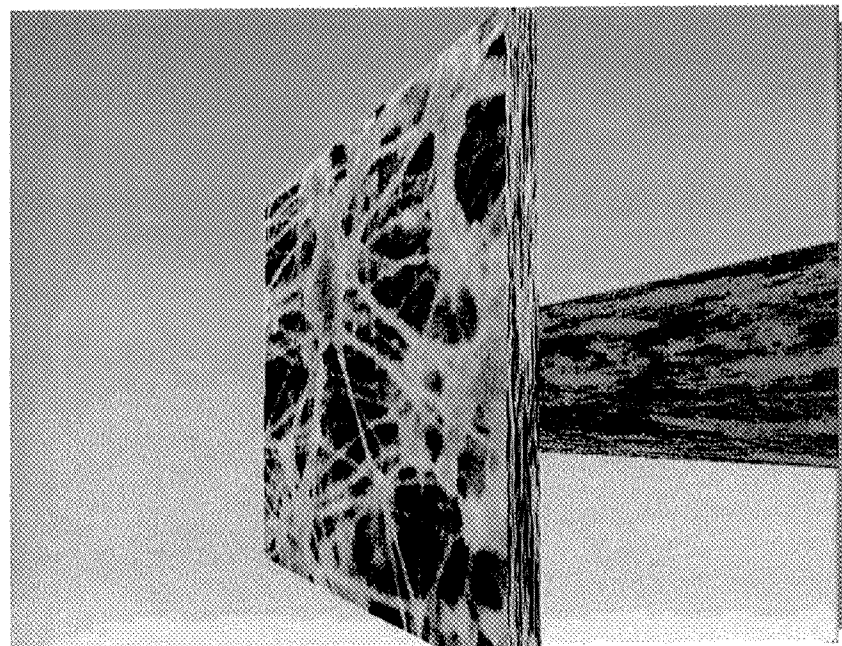


GORE™ Surveys - Collection

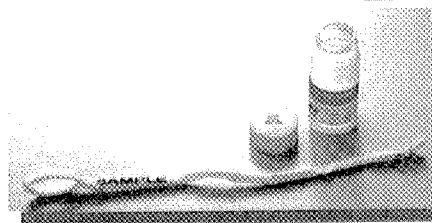
Based on Patented ePTFE Technology

*C₂-C₂₀ molecules are ~5-10A
Membrane pores are ~1000A
Water drops are >5000A*

- **Passive, sorbent-based**
- **Chemically-inert, waterproof, vapor permeable, durable**
 - Sample integrity protected
- **Gore Engineered sorbents**
 - Consistent sampling medium
 - Minimal water vapor uptake
- **Time-integrated sampling**
 - ~17 day exposure
 - Minimize near-surface variability
 - Maximize sensitivity (up to C20)
 - Avoids variables inherent in instantaneous sampling
- **Duplicate samples**



ePTFE - 50,000 x magnification



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Field Installation

- 334 grid samples installed in Great Bear Plains Area
- 18 grid samples installed along transect in Colville
- 15 model samples installed at Losh Lake
- 15 model samples installed at Tweed Lake C12
- 14 model samples installed at Tweed Lake M47
- 8 grid samples and 1 model sample not recovered

GORE™ Surveys –

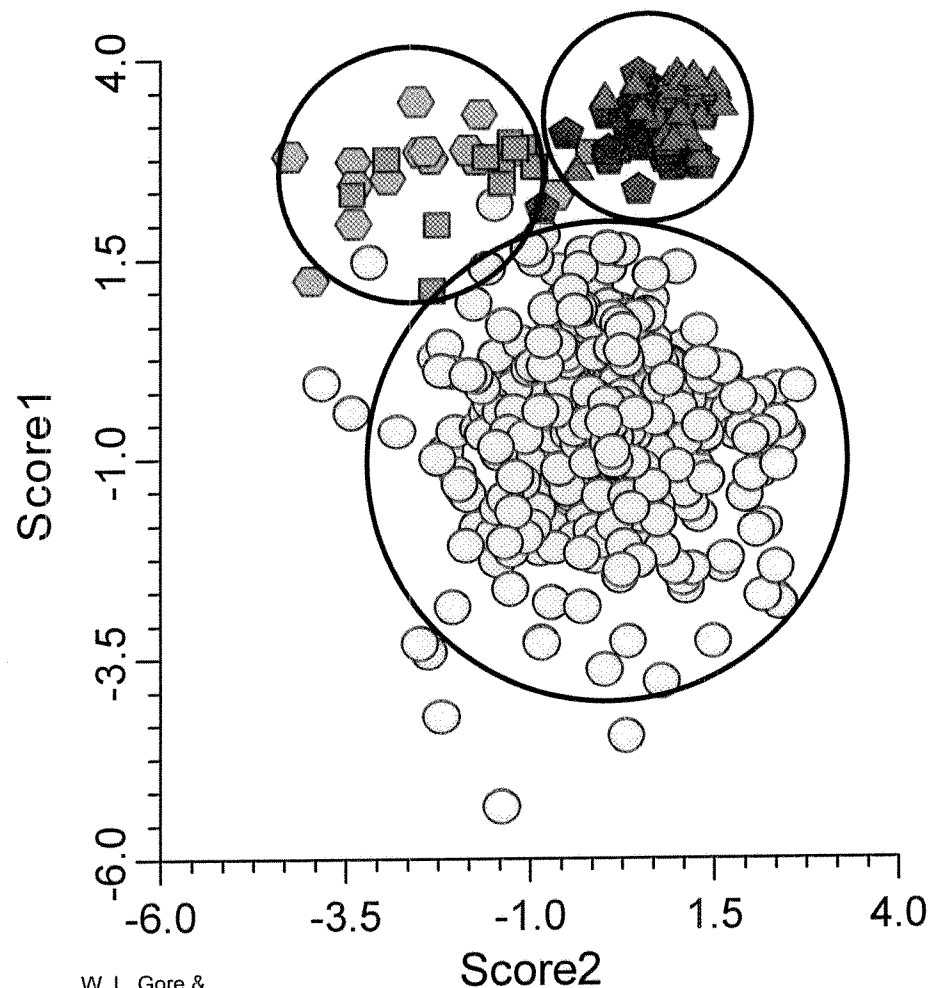
Analyze 85 Target Analytes: C2 – C20

Ethene	Toluene	1-Decene
Ethane	3-Methylheptane	Decane
Propene	cis-1,3-Dimethylcyclohexane	1,2,4-Trimethylbenzene
Propane	cis-1,4-Dimethylcyclohexane	Octanal
1-Butene	1-Octene	Benzofuran
Butane	Cycloheptane	Limonene
2-Methylbutane	cis-1,2-Dimethylcyclohexane	Indane
1-Pentene	Octane	Indene
Pentane	trans-1,3-Dimethylcyclohexane	Butylbenzene
Furan	trans-1,4-Dimethylcyclohexane	1-Undecene
Iodomethane	2,6-Dimethylheptane	Undecane
Carbon disulfide	trans-1,2-Dimethylcyclohexane	Nonanal
Cyclopentane	Ethylcyclohexane	1,2,4,5-Tetramethylbenzene
2-Methylpentane	Ethylbenzene	Camphor
3-Methylpentane	m-Xylene	Dodecane
1-Hexene	p-Xylene	Naphthalene
Hexane	1-Nonene	Decanal
2-Methylfuran	Styrene	Benzothiazole
Methylcyclopentane	o-Xylene	Tridecane
2,4-Dimethylpentane	Nonane	2-Methylnaphthalene
Cyclohexane	Cyclooctane	Tetradecane
Benzene	Propylcyclohexane	Caryophyllene
2-Methylhexane	alpha-Pinene	Acenaphthylene
3-Methylhexane	Camphene	Pentadecane
cis-1,3-Dimethylcyclopentane	Propylbenzene	Hexadecane
trans-1,3-Dimethylcyclopentane	1-Ethyl-2-methylbenzene	Heptadecane
trans-1,2-Dimethylcyclopentane	1-Ethyl-3-methylbenzene	Pristane
1-Heptene	1,3,5-Trimethylbenzene	Octadecane
Heptane	beta-Pinene	Phytane
Methylcyclohexane	1-Ethyl-4-methylbenzene	Carbazole
2,5-Dimethylhexane		



Quality Assurance /Quality Control

Canonical-Variates Scores



Class

- Grid Sample
- ▲ Instrument Blank
- Inventory Blank
- ◆ Method Blank
- ⬡ Trip Blank

Canonical

Results Indicate
Grid Samples
Detected Valid
Field Signal

QA/QC - Signal to Noise

Dimethyl Disulfide

Furan

1-Hexene

Hexane

2-Methylfuran

Benzene

1-Heptene

Toluene

Ethylbenzene

m,p-Xylenes

1-Nonene

o-Xylene

alpha-Pinene

Propylbenzene

1-Ethyl-2/3-methylbenzene

1,3,5-Trimethylbenzene

beta-Pinene

1-Ethyl-4-methylbenzene

1-Decene

1,2,4-Trimethylbenzene

Octanal

Benzofuran

Butylbenzene

Nonanal

1,2,4,5-Tetramethylbenzene

Camphor

Decanal

Benzothiazole

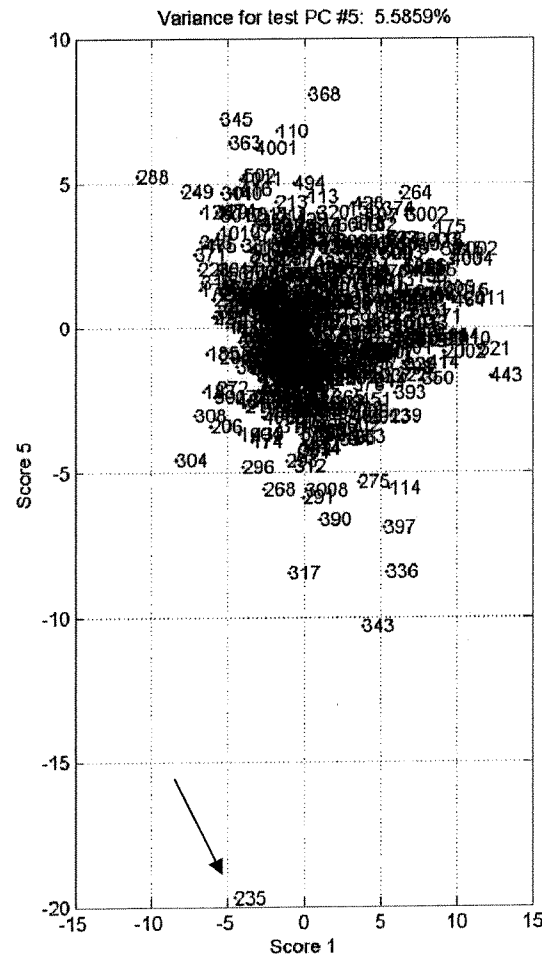
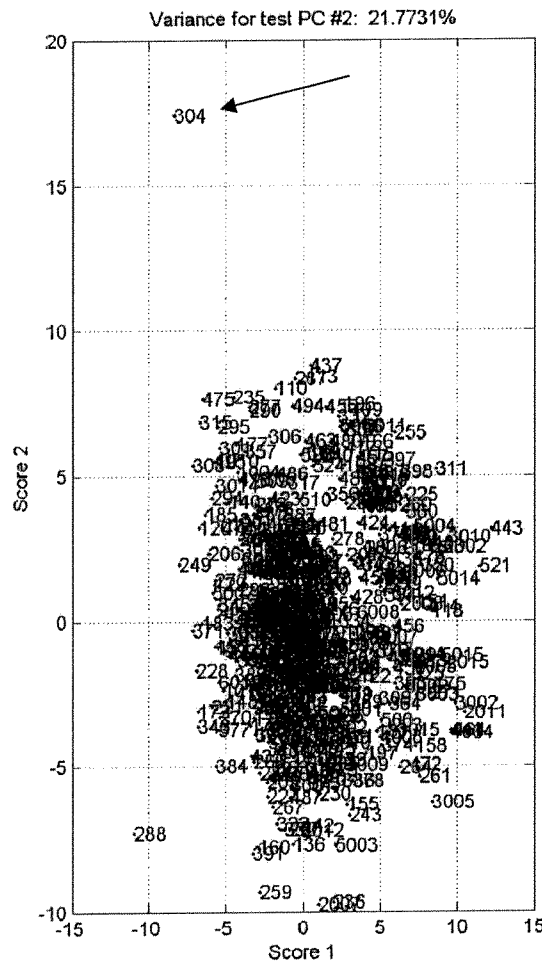
Caryophyllene

Acenaphthylene

*Thirty
Compounds
that failed
S/N*

PCA Outliers

2 Grid Samples and 2 Model Samples
were removed as outliers in PCA



*Example
Outliers*

Model Wells

- Tweed Lake M47 – Gas + Liquids
- Tweed Lake C12 – Dry
- Losh Lake – Dry

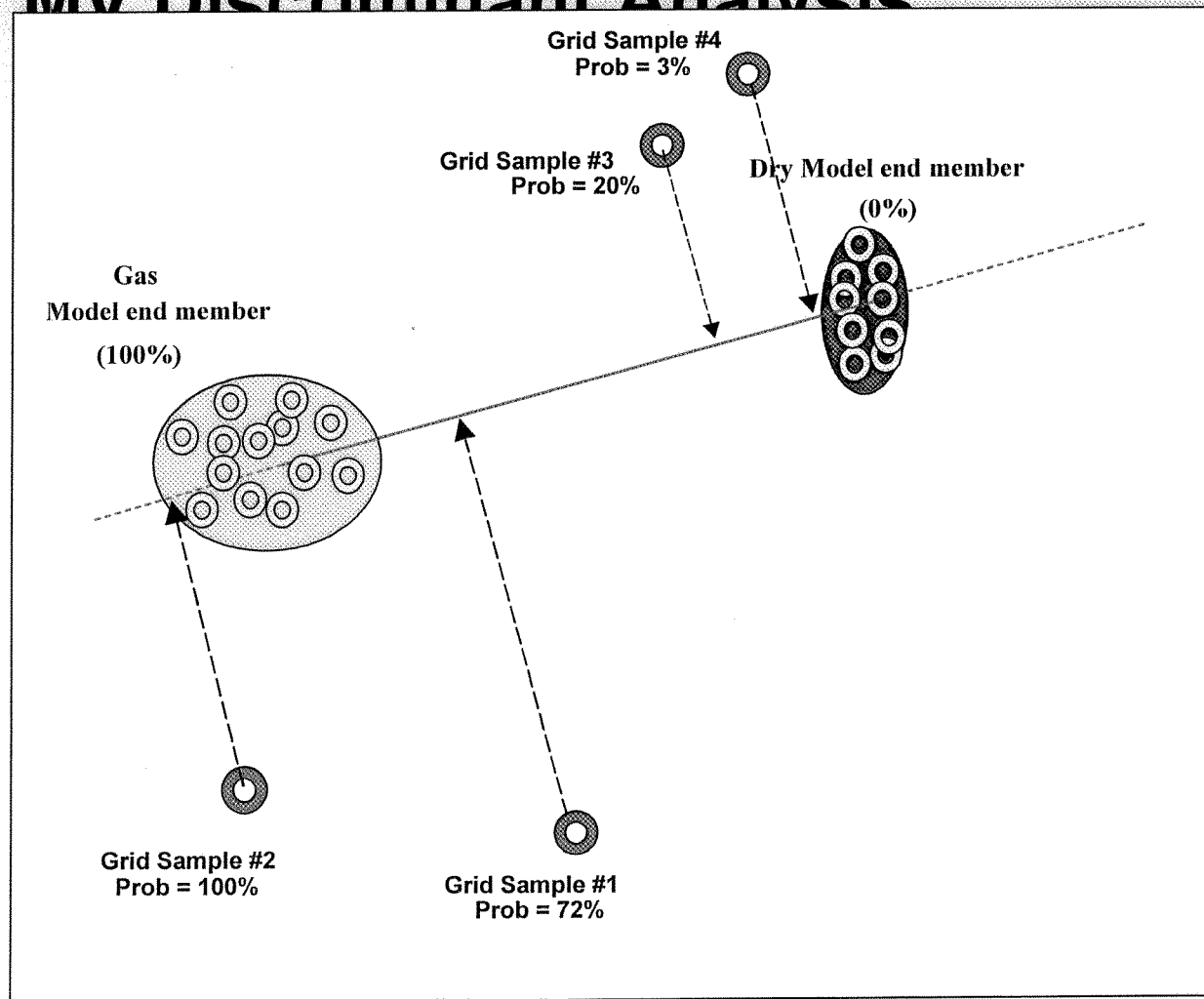
Unproduced wells usually are excellent models. Signature should be of initial state of reservoir.

Model Strategy

- Use PCA and Discriminate Analysis to determine significant differences between Model End-Members
- Tweed Lake M47 Gas End-Member
- Tweed Lake C12 and Losh Lake (Dry) background End-Members
- Use Hierarchical Cluster Analysis on Great Bear Plains samples to determine unique hydrocarbon signatures

GORE™ Surveys – Probability Calculation

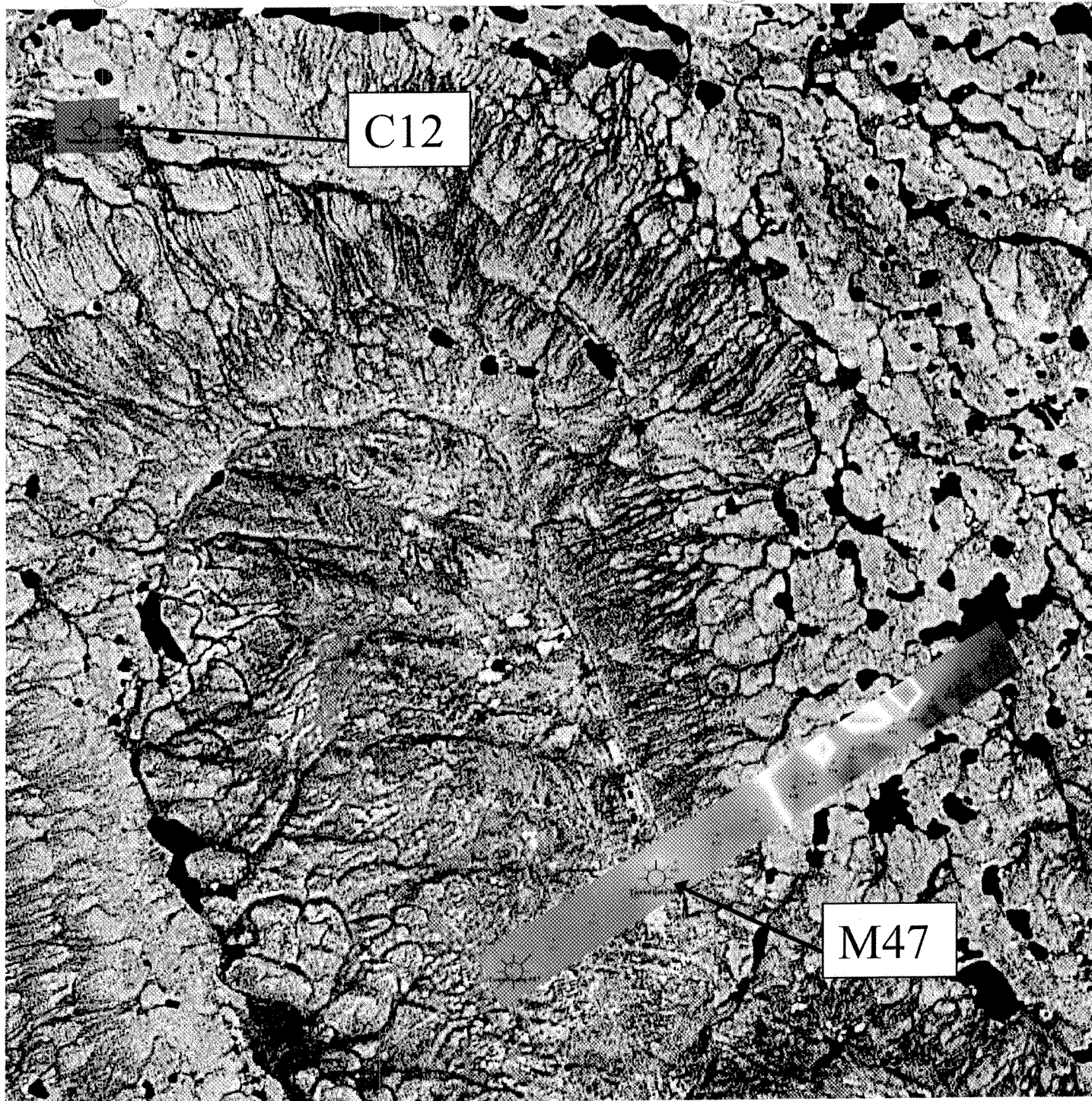
MV Discriminant Analysis



Mathematical
Projection of
Samples on to
Axis of Maximum
Separation of
End-Members

Tweed Lake Model Results

- Individual Samples are Compared to Model End-Member Signatures and given a Probability from 0% to 100% Similarity
- Probability Value for each Sample is plotted and contoured
- Mapped Geochemical Features should be Integrated with Geological Information if Available

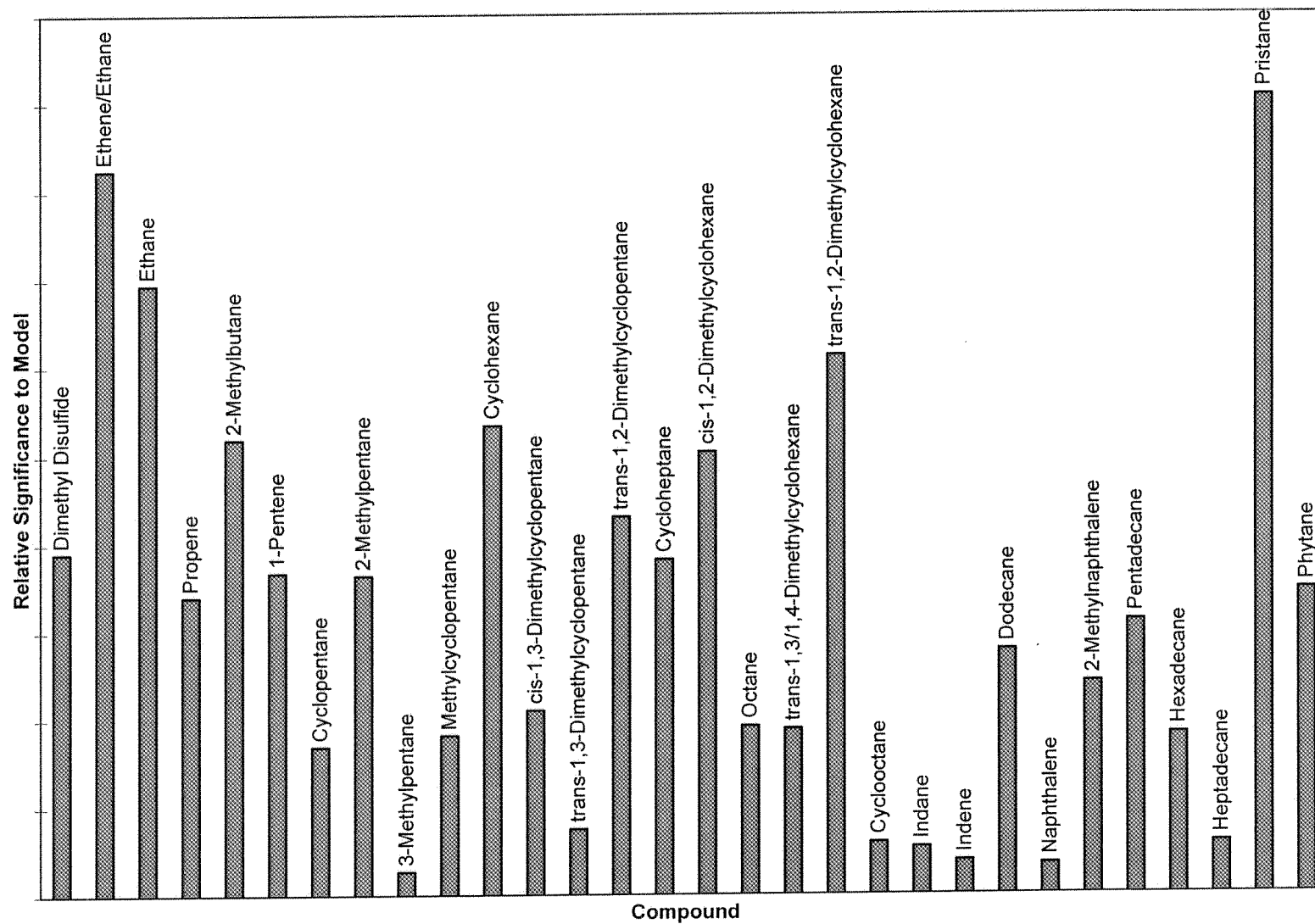


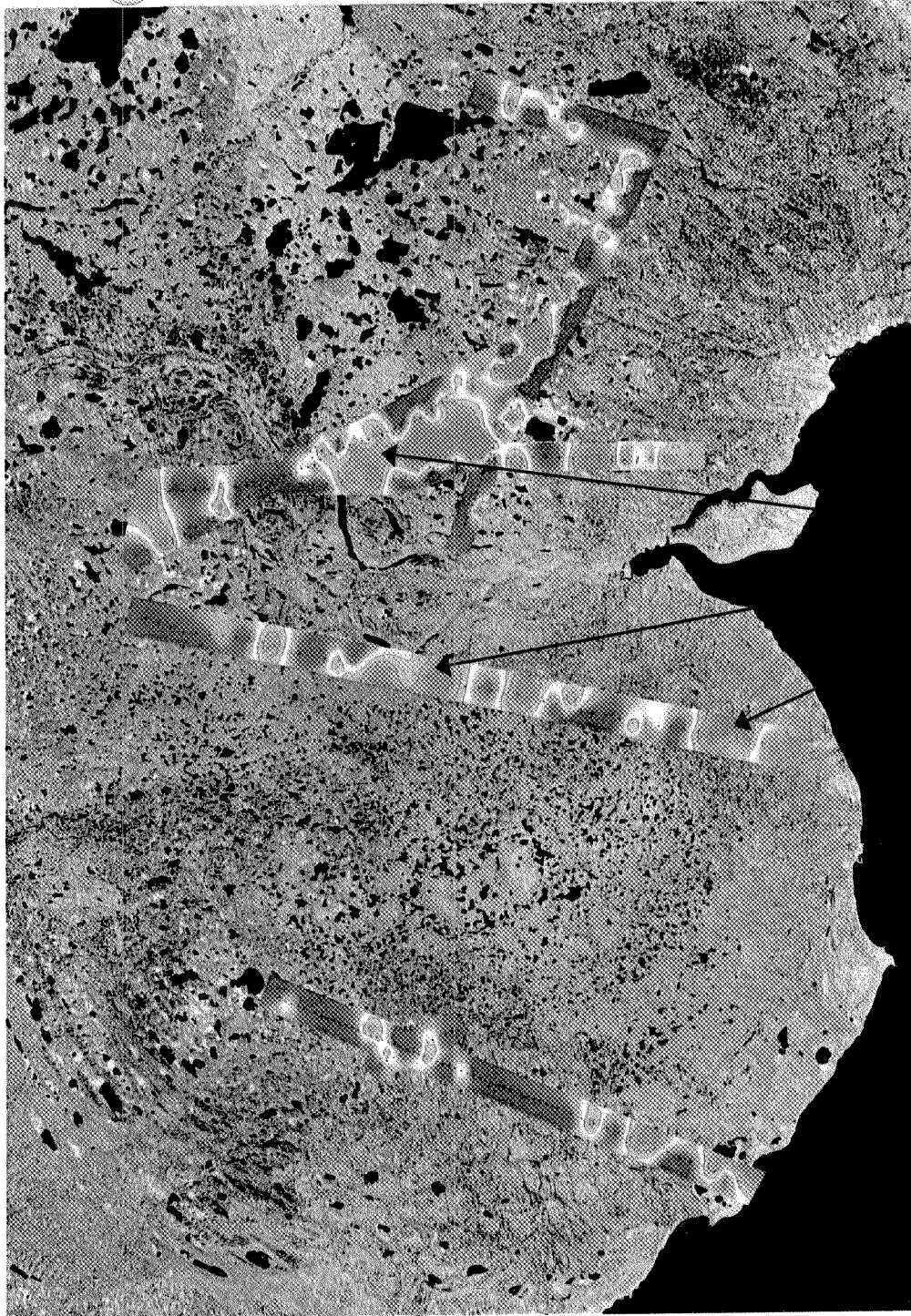
Tweed Lake Result

Geochemical
Feature
Identified at
Tweed Lake

Model of M47
(gas) versus
combined
C12 & Losh
Lake

Tweed Lake Model Signature



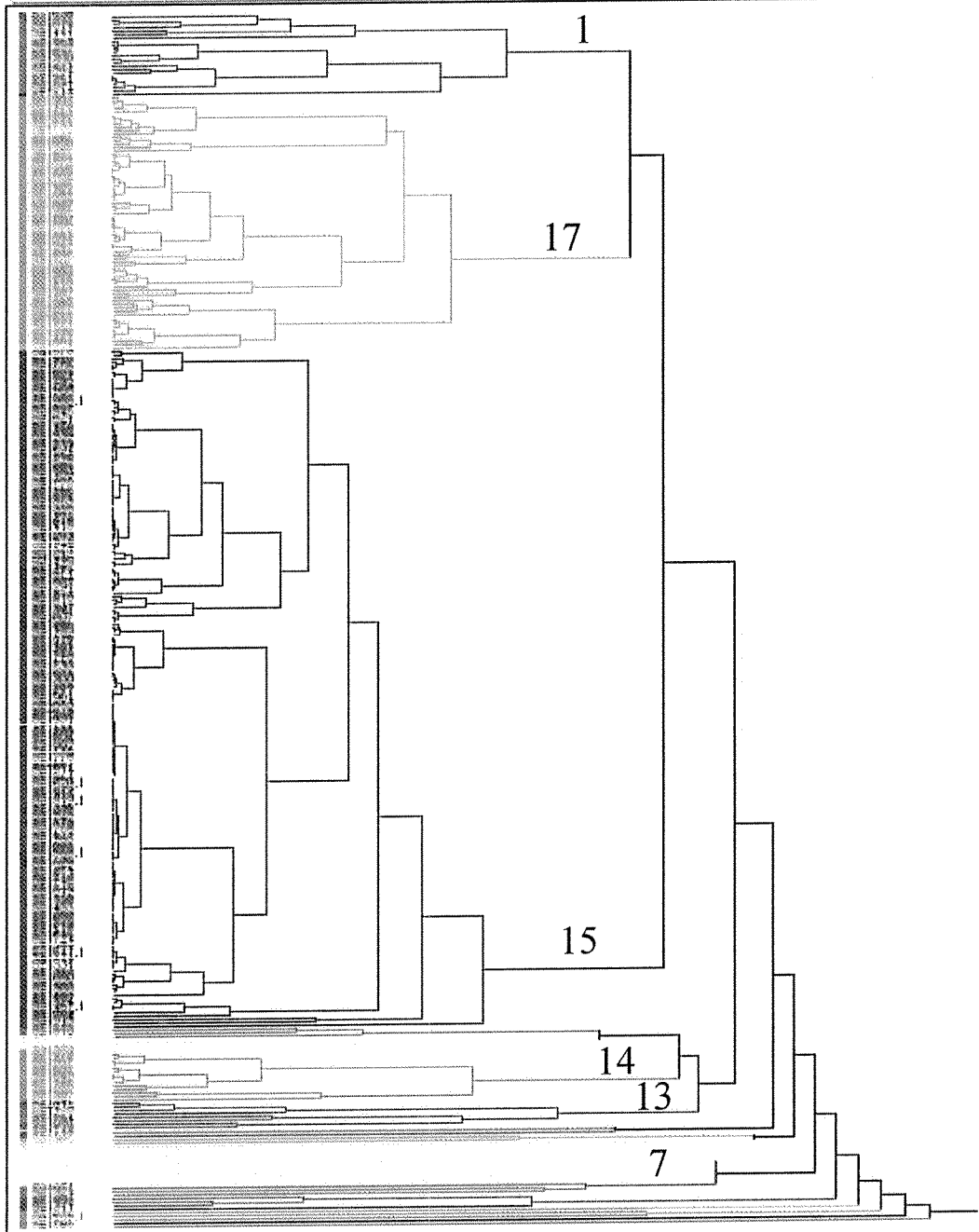


Great Bear Plains Result Based on Tweed Lake Model

Geochemical Features

Hierarchical Clustering

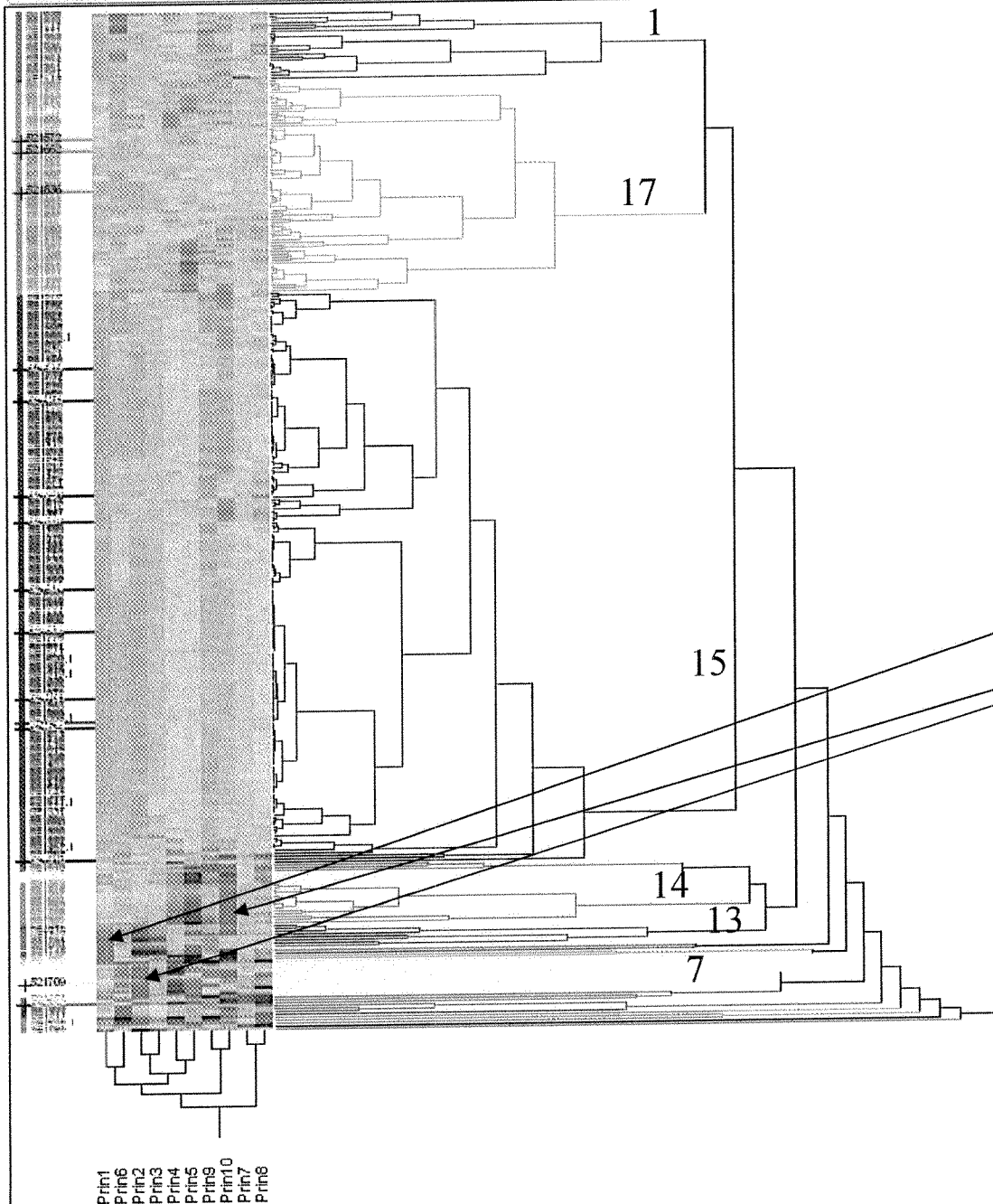
Dendrogram



Hierarchical Cluster
Based on Great
Bear Plains Samples

Hierarchical Clustering

Dendrogram



Hierarchical Cluster

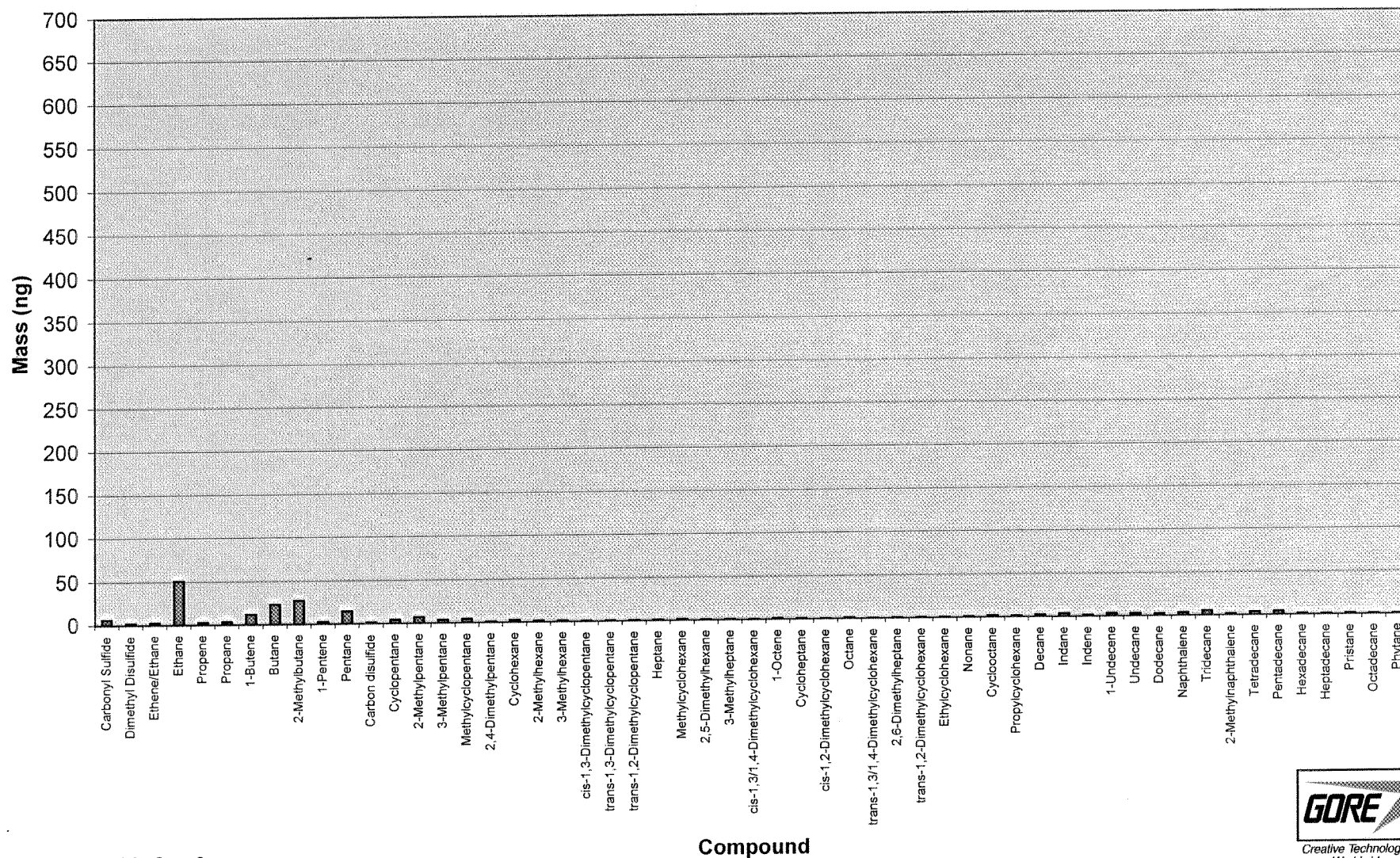
Clusters 15 and 17
Appear Unremarkable
(Background)

Principle Components
Correlated to Clusters

Losh Lake Model
Samples Appear in
Clusters 15 & 17

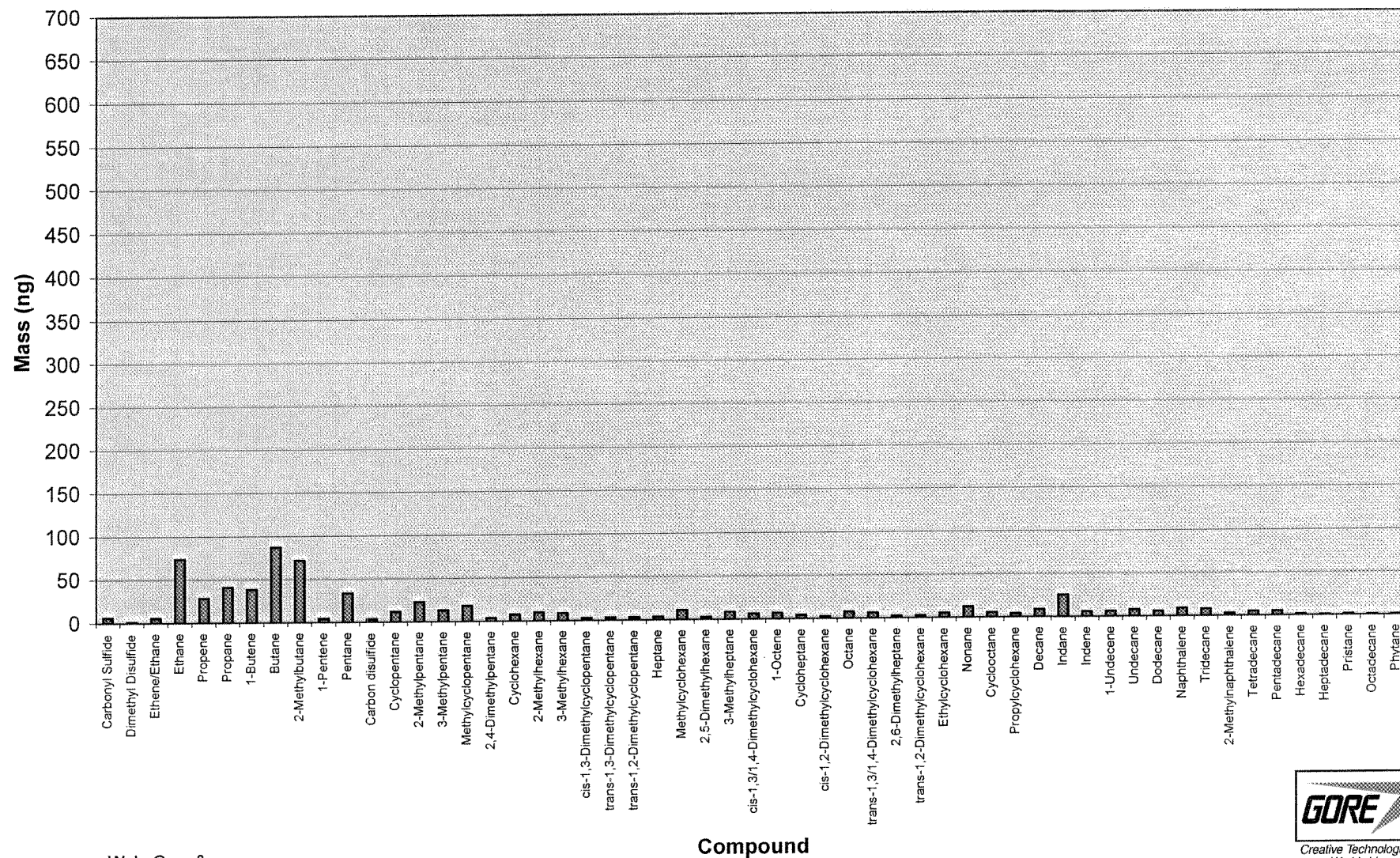
Cluster 15 Signature

Cluster 15 Signature (Background)



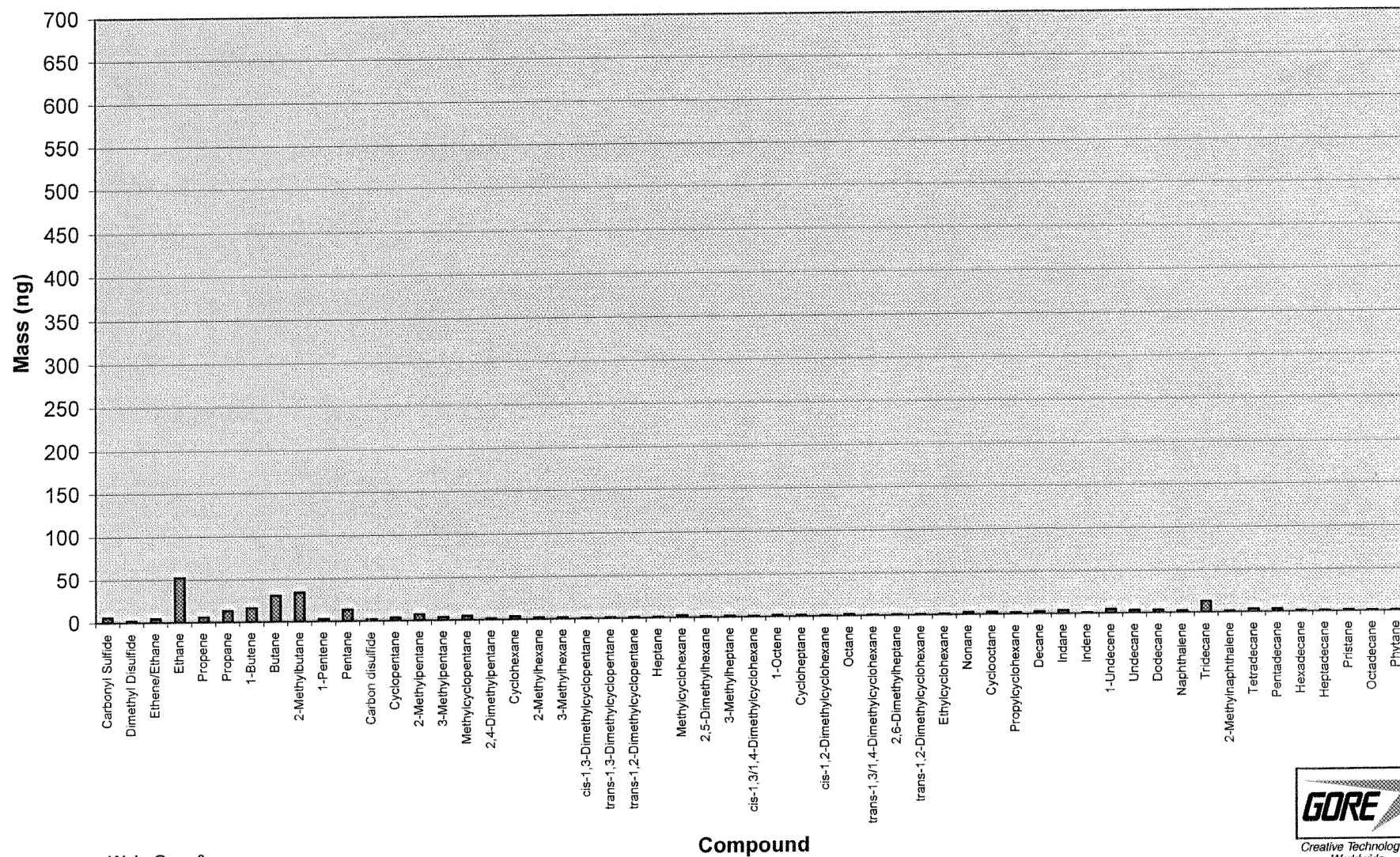
Cluster 17 Signature

Cluster 17 Signature



Losh Lake Signature

Losh Lake Signature

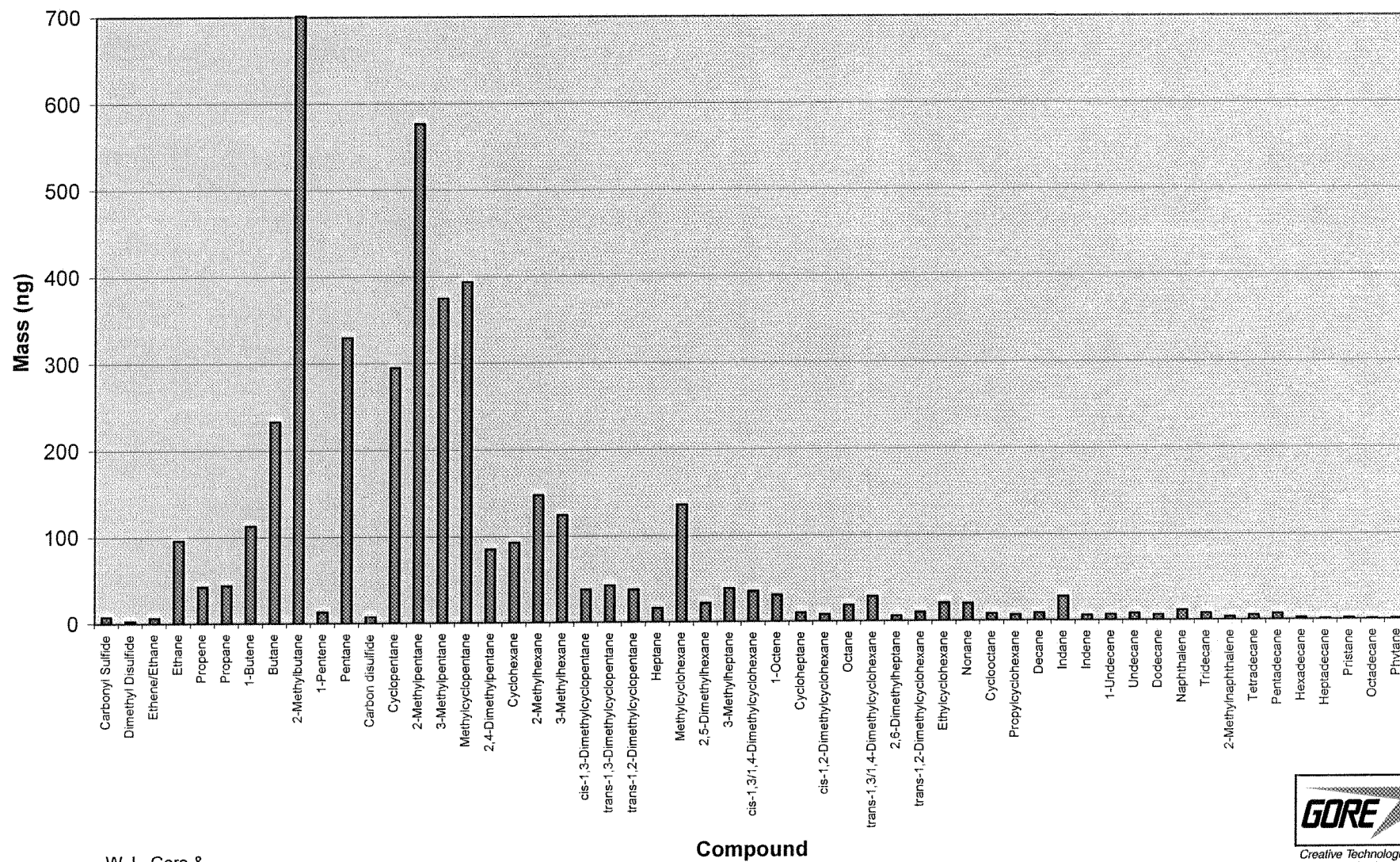


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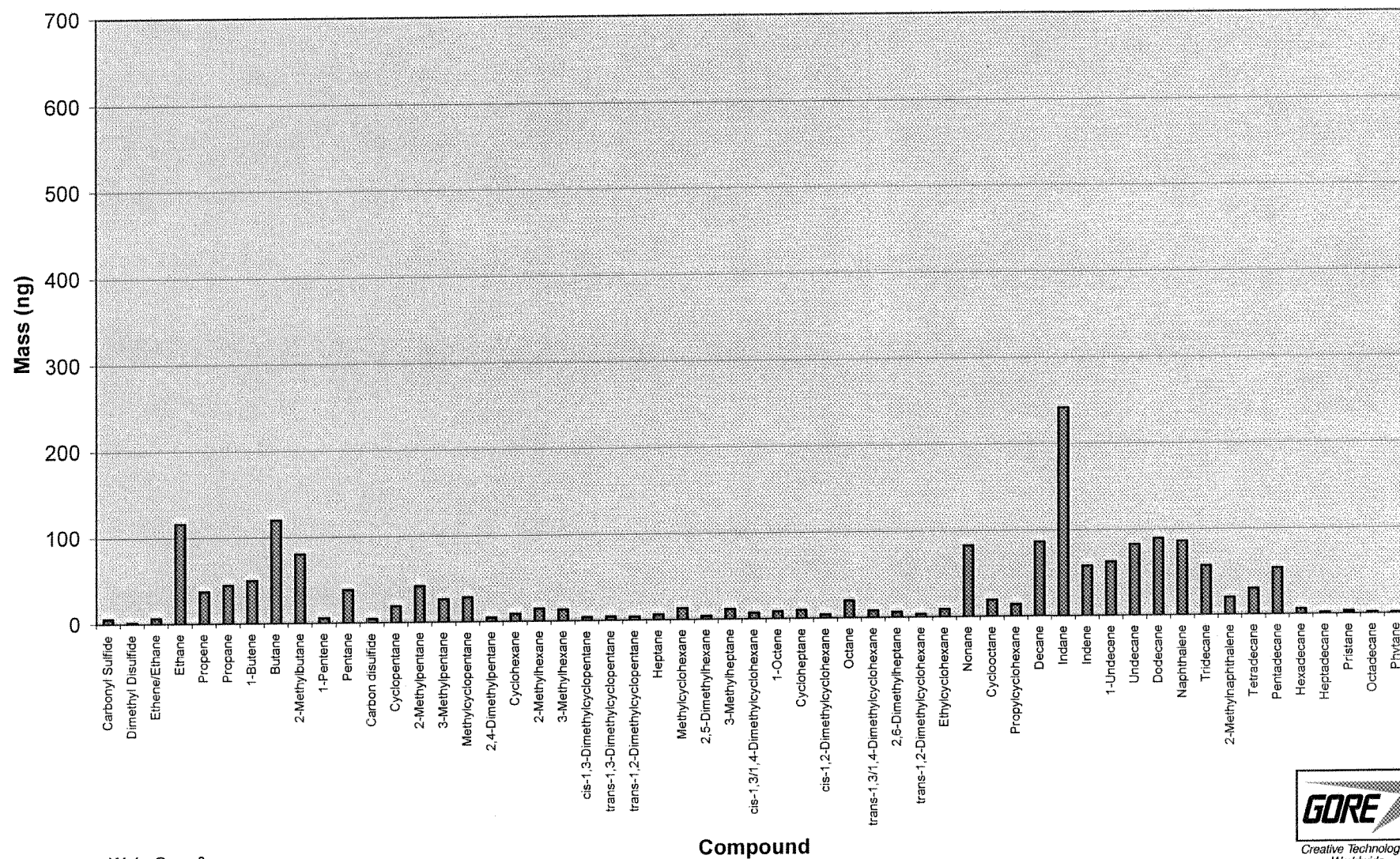
Cluster 13 Signature

Cluster 13 Signature



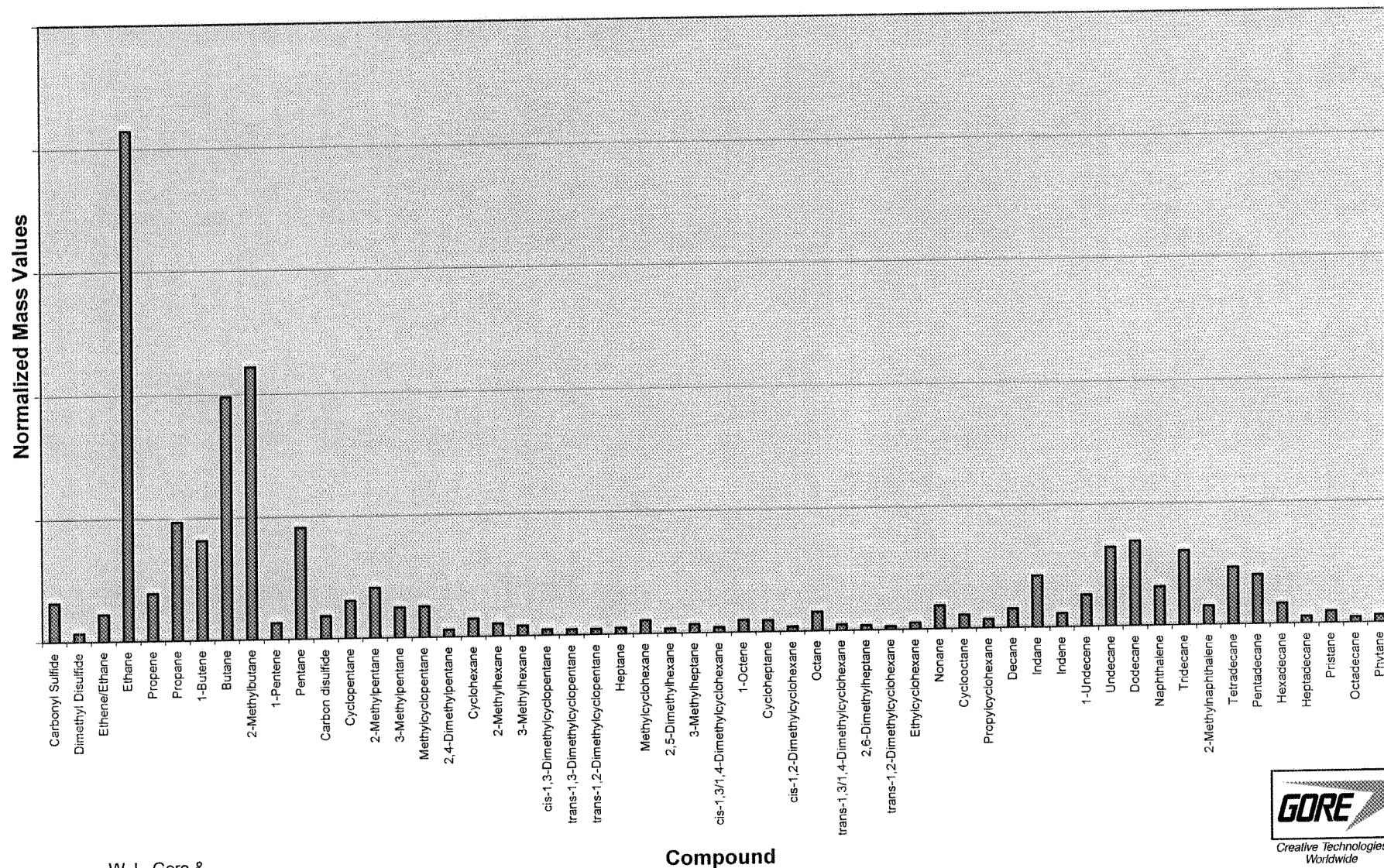
Cluster 7 Signature

Cluster 7 Signature



Tweed Lake M47 Signature

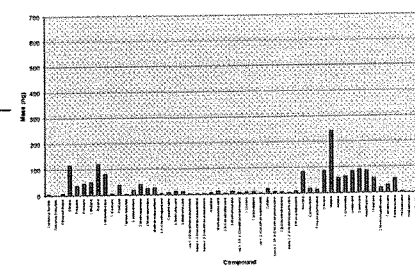
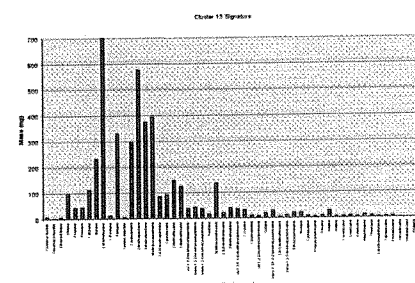
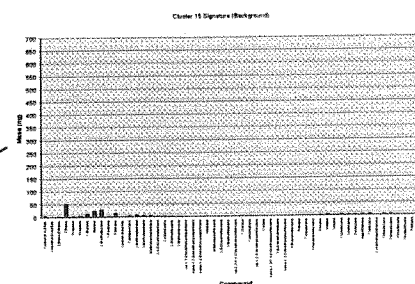
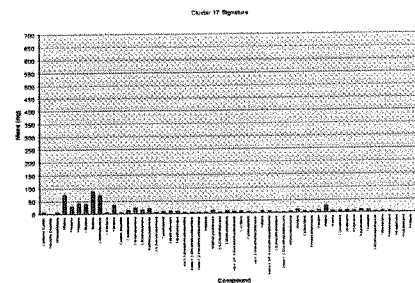
Tweed Lake M47 Signature



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Hierarchical Cluster

Dendrogram



This photograph shows a rock surface with several dark, elongated objects, possibly fossils or mineral inclusions. The objects are labeled with letters and numbers, and arrows point to specific features. The labels include 'a', 'b', 'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j', 'k', 'l', 'm', 'n', 'o', 'p', 'q', 'r', 's', 't', 'u', 'v', 'w', 'x', 'y', 'z', 'aa', 'ab', 'ac', 'ad', 'ae', 'af', 'ag', 'ah', 'ai', 'aj', 'ak', 'al', 'am', 'an', 'ao', 'ap', 'aq', 'ar', 'as', 'at', 'au', 'av', 'aw', 'ax', 'ay', 'az', 'ba', 'bb', 'bc', 'bd', 'be', 'bf', 'bg', 'bh', 'bi', 'bj', 'bk', 'bl', 'bm', 'bn', 'bo', 'bp', 'bq', 'br', 'bs', 'bt', 'bu', 'bv', 'bw', 'bx', 'by', 'bz', 'ca', 'cb', 'cc', 'cd', 'ce', 'cf', 'cg', 'ch', 'ci', 'cj', 'ck', 'cl', 'cm', 'cn', 'co', 'cp', 'cq', 'cr', 'cs', 'ct', 'cu', 'cv', 'cw', 'cx', 'cy', 'cz', 'da', 'db', 'dc', 'dd', 'de', 'df', 'dg', 'dh', 'di', 'dj', 'dk', 'dl', 'dm', 'dn', 'do', 'dp', 'dq', 'dr', 'ds', 'dt', 'du', 'dv', 'dw', 'dx', 'dy', 'dz', 'ea', 'eb', 'ec', 'ed', 'ee', 'ef', 'eg', 'eh', 'ei', 'ej', 'ek', 'el', 'em', 'en', 'eo', 'ep', 'eq', 'er', 'es', 'et', 'eu', 'ev', 'ew', 'ex', 'ey', 'ez', 'fa', 'fb', 'fc', 'fd', 'fe', 'ff', 'fg', 'fh', 'fi', 'fj', 'fk', 'fl', 'fm', 'fn', 'fo', 'fp', 'fq', 'fr', 'fs', 'ft', 'fu', 'fv', 'fw', 'fx', 'fy', 'fz', 'ga', 'gb', 'gc', 'gd', 'ge', 'gf', 'gg', 'gh', 'gi', 'gj', 'gk', 'gl', 'gm', 'gn', 'go', 'gp', 'gq', 'gr', 'gs', 'gt', 'gu', 'gv', 'gw', 'gx', 'gy', 'gz', 'ha', 'hb', 'hc', 'hd', 'he', 'hf', 'hg', 'hh', 'hi', 'hj', 'hk', 'hl', 'hm', 'hn', 'ho', 'hp', 'hq', 'hr', 'hs', 'ht', 'hu', 'hv', 'hw', 'hx', 'hy', 'hz', 'ia', 'ib', 'ic', 'id', 'ie', 'if', 'ig', 'ih', 'ii', 'ij', 'ik', 'il', 'im', 'in', 'io', 'ip', 'iq', 'ir', 'is', 'it', 'iu', 'iv', 'iw', 'ix', 'iy', 'iz', 'ja', 'jb', 'jc', 'jd', 'je', 'jf', 'jg', 'jh', 'ji', 'jj', 'jk', 'jl', 'jm', 'jn', 'jo', 'jp', 'jq', 'jr', 'js', 'jt', 'ju', 'jv', 'jw', 'jx', 'jy', 'jz', 'ka', 'kb', 'kc', 'kd', 'ke', 'kf', 'kg', 'kh', 'ki', 'kj', 'kk', 'kl', 'km', 'kn', 'ko', 'kp', 'kq', 'kr', 'ks', 'kt', 'ku', 'kv', 'kw', 'kx', 'ky', 'kz', 'la', 'lb', 'lc', 'ld', 'le', 'lf', 'lg', 'lh', 'li', 'lj', 'lk', 'll', 'lm', 'ln', 'lo', 'lp', 'lq', 'lr', 'ls', 'lt', 'lu', 'lv', 'lw', 'lx', 'ly', 'lz', 'ma', 'mb', 'mc', 'md', 'me', 'mf', 'mg', 'mh', 'mi', 'mj', 'mk', 'ml', 'mm', 'mn', 'mo', 'mp', 'mq', 'mr', 'ms', 'mt', 'mu', 'mv', 'mw', 'mx', 'my', 'mz', 'na', 'nb', 'nc', 'nd', 'ne', 'nf', 'ng', 'nh', 'ni', 'nj', 'nk', 'nl', 'nm', 'nn', 'no', 'np', 'nq', 'nr', 'ns', 'nt', 'nu', 'nv', 'nw', 'nx', 'ny', 'nz', 'oa', 'ob', 'oc', 'od', 'oe', 'of', 'og', 'oh', 'oi', 'oj', 'ok', 'ol', 'om', 'on', 'oo', 'op', 'oq', 'or', 'os', 'ot', 'ou', 'ov', 'ow', 'ox', 'oy', 'oz', 'pa', 'pb', 'pc', 'pd', 'pe', 'pf', 'pg', 'ph', 'pi', 'pj', 'pk', 'pl', 'pm', 'pn', 'po', 'pp', 'pq', 'pr', 'ps', 'pt', 'pu', 'pv', 'pw', 'px', 'py', 'pz', 'qa', 'qb', 'qc', 'qd', 'qe', 'qf', 'qg', 'qh', 'qi', 'qj', 'qk', 'ql', 'qm', 'qn', 'qo', 'qp', 'qq', 'qr', 'qs', 'qt', 'qu', 'qv', 'qw', 'qx', 'qy', 'qz', 'ra', 'rb', 'rc', 'rd', 're', 'rf', 'rg', 'rh', 'ri', 'rj', 'rk', 'rl', 'rm', 'rn', 'ro', 'rp', 'rq', 'rr', 'rs', 'rt', 'ru', 'rv', 'rw', 'rx', 'ry', 'rz', 'sa', 'sb', 'sc', 'sd', 'se', 'sf', 'sg', 'sh', 'si', 'sj', 'sk', 'sl', 'sm', 'sn', 'so', 'sp', 'sq', 'sr', 'ss', 'st', 'su', 'sv', 'sw', 'sx', 'sy', 'sz', 'ta', 'tb', 'tc', 'td', 'te', 'tf', 'tg', 'th', 'ti', 'tj', 'tk', 'tl', 'tm', 'tn', 'to', 'tp', 'tq', 'tr', 'ts', 'tt', 'tu', 'tv', 'tw', 'tx', 'ty', 'tz', 'ua', 'ub', 'uc', 'ud', 'ue', 'uf', 'ug', 'uh', 'ui', 'uj', 'uk', 'ul', 'um', 'un', 'uo', 'up', 'uq', 'ur', 'us', 'ut', 'uu', 'uv', 'uw', 'ux', 'uy', 'uz', 'va', 'vb', 'vc', 'vd', 've', 'vf', 'vg', 'vh', 'vi', 'vj', 'vk', 'vl', 'vm', 'vn', 'vo', 'vp', 'vq', 'vr', 'vs', 'vt', 'vu', 'vv', 'vw', 'vx', 'vy', 'vz', 'wa', 'wb', 'wc', 'wd', 'we', 'wf', 'wg', 'wh', 'wi', 'wj', 'wk', 'wl', 'wm', 'wn', 'wo', 'wp', 'wq', 'wr', 'ws', 'wt', 'wu', 'wv', 'ww', 'wx', 'wy', 'wz', 'xa', 'xb', 'xc', 'xd', 'xe', 'xf', 'xg', 'xh', 'xi', 'xj', 'xk', 'xl', 'xm', 'xn', 'xo', 'xp', 'xq', 'xr', 'xs', 'xt', 'xu', 'xv', 'xw', 'xx', 'xy', 'xz', 'ya', 'yb', 'yc', 'yd', 'ye', 'yf', 'yg', 'yh', 'yi', 'yj', 'yk', 'yl', 'ym', 'yn', 'yo', 'yp', 'yq', 'yr', 'ys', 'yt', 'yu', 'yv', 'yw', 'yx', 'yy', 'yz', 'za', 'zb', 'zc', 'zd', 'ze', 'zf', 'zg', 'zh', 'zi', 'zj', 'zk', 'zl', 'zm', 'zn', 'zo', 'zp', 'zq', 'zr', 'zs', 'zt', 'zu', 'zv', 'zw', 'zx', 'zy', 'zz'. The arrows point to specific features, and the labels are placed near the objects.

Similar to Background



Discriminate
Analysis Result of
Cluster 7
(Gas/Liquids) versus
Losh Lake
Signatures

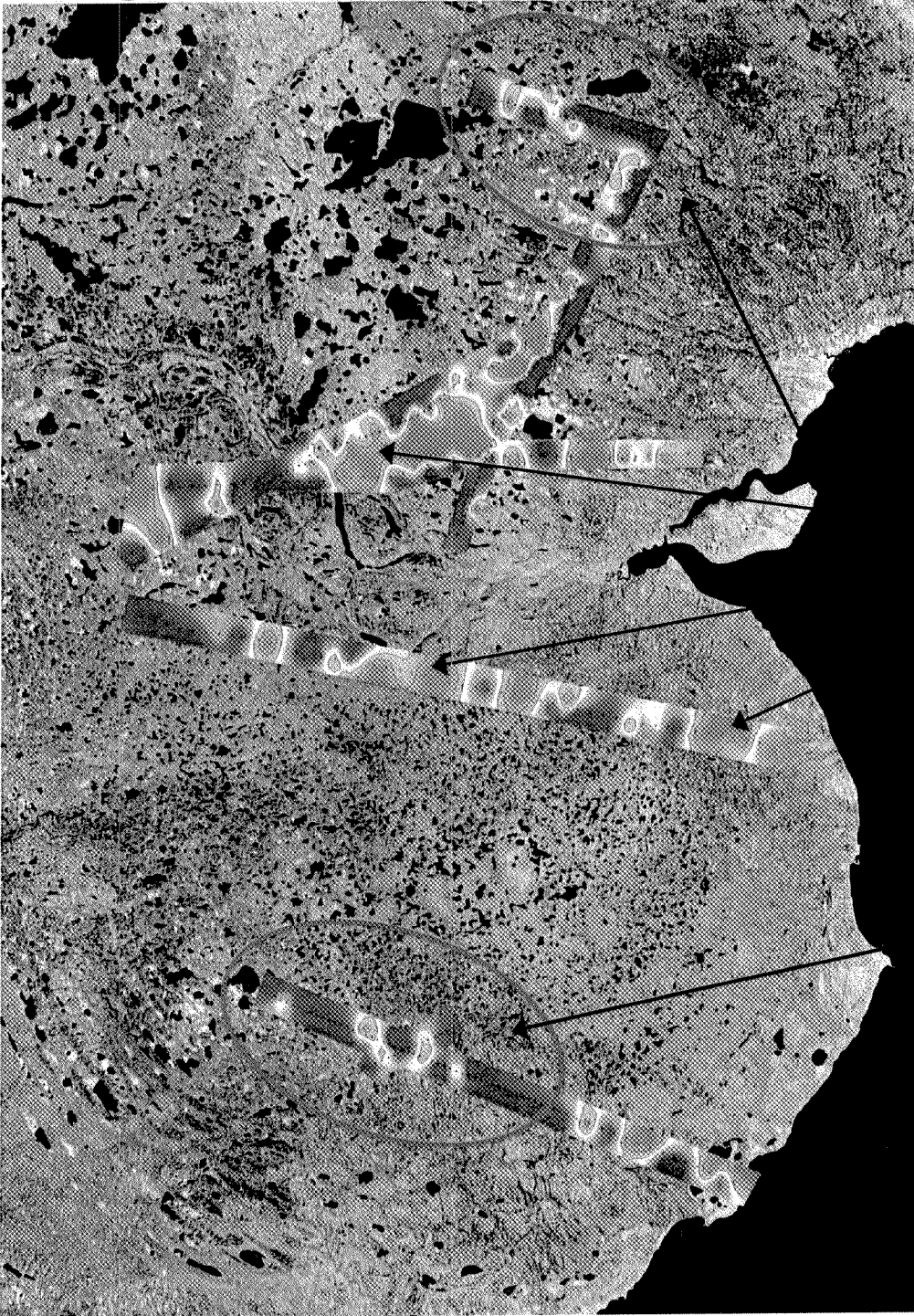
Geochemical Features



Discriminate Analysis
Result of Combined
Clusters 13 & 7
versus Losh Lake
Signatures

Geochemical Features

Great Bear Plains Result Based on Tweed Lake Model



Geochemical Features

Areas of Low Prospectivity

Conclusions

- The results (from both the Tweed Lake model and HCA) indicate the Great Bear Plains survey area has several areas with strong indications of hydrocarbons in the subsurface (gas with a possible liquid component).
- These results also indicate several areas in the Great Bear Plains survey area that appear to have little or no indication of reservoired hydrocarbons.
- Hydrocarbons were detected in the Colville area at the Tweed Lake M47 Well. A geochemical feature was identified along the transect that corresponds with the M47 well and extends southwest to the A67 well.
- These geochemical results should be integrated with available geological and geophysical information.



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Thank you,

Survey Products Group

Talisman Great Bear Plains Survey
Model Probability Values

Talisman Energy Inc.

13045661 EL437 NWT

Coordinates are UTM Zone 10 NAD 83 Datum

INDEX ID	MODULE #	Easting	Northing	Status	Cluster Group	Probability Value	Probability Value	Probability Value	Probability Value
						Model Tweed Lake M-47	Model Cluster 13	Model Cluster 7	Model Clusters 7 & 13
101	521630	489159	7244856	Grid	1	0	0	12	77
102	521502	488677	7245042	Grid	15	6	0	12	93
103	521938	489368	7244767	Grid	15	0	0	0	0
104	521706	488909	7244960	Grid	15	67	0	0	5
105	521574	488463	7245195	Grid	1	0	0	0	61
106	521557	490986	7244107	Grid	1	0	0	4	5
107	521882	491687	7243819	Grid	6	95	0	23	100
108	521449	491921	7243719	Grid	15	1	0	0	3
109	521454	492614	7243435	Grid	17	0	0	0	0
110	521993	491436	7243923	Grid	6	8	0	100	100
111	521487	490307	7244381	Grid	17	0	0	0	0
112	521396	490052	7244483	Grid	17	0	0	75	36
113	521625	492150	7243625	Grid	15	19	0	1	9
114	521531	491225	7244012	Grid	17	0	0	0	0
115	521932	490526	7244290	Grid	17	0	0	1	0
116	521538	490749	7244201	Grid	1	0	2	60	58
117	521290	492828	7243350	Grid	15	4	0	0	0
118	521431	492364	7243541	Grid	15	92	0	0	1
119	521985	489822	7244584	Grid	15	0	0	99	99
120	521644	493293	7243163	Grid	1	0	0	6	24
121	521620	498146	7241209	Grid	15	0	0	0	0
122	521693	494231	7242780	Grid	15	97	0	0	0
123	521482	496300	7241954	Grid	15	0	0	0	0
124	521303	496084	7242036	Grid	15	0	0	0	0
125	521641	498624	7241016	Grid	15	0	0	0	0
126	521770	495860	7242116	Grid	15	0	0	0	1
127	521547	493759	7242972	Grid	17	0	0	98	90
128	521897	499067	7240834	Grid	17	0	0	76	3
129	521708	495618	7242212	Grid	17	0	0	0	0
130	521714	497902	7241297	Grid	15	0	0	0	1
131	521432	495383	7242313	Grid	15	100	0	0	13
132	521698	493059	7243251	Grid	7	0	0	100	96
133	521267	494683	7242596	Grid	17	0	0	1	0
134	521564	498385	7241117	Grid	15	7	0	0	0
135	521507	497006	7241690	Grid	7	0	0	100	94
136	521463	494914	7242504	Grid	1	1	0	91	86
137	521859	498858	7240923	Grid	17	0	0	2	0

Talisman Great Bear Plains Survey
Model Probability Values

INDEX						Probability Value	Probability Value	Probability Value	Probability Value
ID	MODULE #	Easting	Northing	Status	Cluster Group	Model Tweed Lake M-47	Model Cluster 13	Model Cluster 7	Model Clusters 7 & 13
138	521260	497667	7241377	Grid	15	0	0	0	1
139	521442	497234	7241585	Grid	15	0	0	0	0
140	521737	495153	7242404	Grid	17	0	0	31	2
141	521348	496525	7241862	Grid	15	0	0	0	0
142	521393	494464	7242688	Grid	15	5	0	1	56
143	521611	496767	7241787	Grid	17	0	0	0	0
144	521582	493995	7242880	Grid	15	69	0	0	29
145	521337	493553	7243059	Grid	15	0	0	1	40
146	521900	503265	7239102	Grid	17	15	0	15	0
147	521981	502312	7239495	Grid	1	87	0	86	99
148	521580	500461	7240258	Grid	15	100	0	1	2
149	521650	501392	7239873	Grid	15	0	0	0	8
150	521569	505086	7238350	Grid	15	99	0	0	13
151	522013	506000	7237977	Grid	15	87	0	0	0
152	522009	504141	7238740	Grid	15	0	0	2	1
153	521870	501851	7239681	Grid	15	100	0	16	36
154	521551	502791	7239294	Grid	15	96	0	1	7
155	521887	499588	7240625	Grid	15	1	0	0	0
156	521929	503717	7238914	Grid	15	0	0	0	0
157	521689	500921	7240068	Grid	17	0	0	94	61
158	521874	505525	7238174	Grid	17	0	0	0	0
159	521752	499984	7240452	Grid	17	41	0	25	0
160	521803	499300	7240734	Grid	15	1	0	0	28
161	521281	504577	7238563	Grid	15	42	0	0	1
162	521288	485328	7259214	Grid	15	0	0	0	1
163	521903	489249	7258428	Grid	17	0	0	0	0
164	521387	484353	7259460	Grid	17	0	0	0	0
165	521808	490724	7258117	Grid	15	100	0	0	0
166	521294	483383	7259780	Grid	15	0	0	0	0
167	521885	485825	7259161	Grid	15	10	0	0	0
168	521261	486826	7259050	Grid	15	0	0	0	0
169	521600	490218	7258202	Grid	7	0	0	81	69
170	521883	487817	7258872	Grid	15	82	0	0	0
171	521627	484826	7259280	Grid	8	0	100	0	60
172	521272	487325	7258994	Grid	15	0	0	0	0
173	521832	486328	7259105	Grid	15	40	0	0	0
174	521961	483872	7259648	Grid	15	0	0	0	0
175	521423	487245	7264830	Grid	15	0	0	0	1
176	521268	488814	7264883	Grid	11	0	0	2	0
177	521428	489321	7264903	Grid	15	0	0	0	0
178	521382	492848	7265033	Grid	15	0	0	0	1

Talisman Great Bear Plains Survey
Model Probability Values

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ID	MODULE #	Easting	Northing	Status	Cluster Group	Model Tweed Lake M-47	Model Cluster 13	Model Cluster 7	Model Clusters 7 & 13
179	521606	484782	7264669	Grid	17	4	1	0	1
180	521257	491341	7264979	Grid	15	75	0	0	0
181	521849	487747	7264850	Grid	15	0	0	0	0
182	521478	490303	7264880	Grid	7	0	0	77	98
183	521810	484291	7264661	Grid	17	1	3	0	6
184	521347	489790	7264845	Grid	1	0	0	0	13
185	521613	490860	7264939	Grid	15	100	0	0	0
186	521975	493775	7265337	Grid	15	95	0	0	1
187	521778	492353	7265021	Grid	15	99	0	0	0
188	521520	485277	7264701	Grid	17	0	0	80	92
189	521755	483781	7264648	Grid	15	98	0	4	96
190	521667	485783	7264743	Grid	17	0	1	0	0
191	521486	486763	7264814	Grid	17	0	3	1	0
192	521842	491839	7265031	Grid	15	89	0	0	0
193	521573	493325	7265153	Grid	15	21	0	0	6
194	521982	486274	7264780	Grid	4	93	0	74	0
195	521302	488307	7264868	Grid	17	0	0	1	8
196	521469	492694	7257785	Grid	13	91	100	99	100
197	521366	494724	7265663	Grid	15	100	0	16	99
198	521553	496204	7265813	Grid	15	99	0	0	1
199	521453	496701	7265792	Grid	15	100	3	18	100
200	521527	493656	7257565	Grid	13	70	100	90	100
201	521692	493198	7257686	Grid	9	63	100	100	100
202	521636	498177	7265806	Grid	15	8	0	1	37
203	521661	491229	7258032	Grid	15	0	0	0	7
204	521656	492201	7257863	Grid	15	97	0	0	12
205	521818	497708	7265807	Grid	15	100	15	25	96
206	521335	494236	7265495	Grid	15	0	0	0	0
207	521331	495225	7265747	Grid	15	0	0	0	1
208	521754	497209	7265790	Grid	13	79	100	99	100
209	521889	494143	7257443	Grid	15	100	31	40	99
210	521986	488277	7258709	Grid	13	100	100	98	100
211	521614	495741	7265817	Grid	15	90	0	0	5
212	521637	499995	7256119	Grid	15	0	0	0	0
213	521447	499187	7265785	Grid	15	0	0	0	0
214	521477	499043	7256342	Grid	1	0	0	1	42
215	521433	498571	7256467	Grid	13	50	100	77	100
216	521536	498676	7265799	Grid	15	0	0	0	0
217	521787	502674	7265771	Grid	15	0	0	0	1
218	521838	500200	7265735	Grid	15	100	25	1	85
219	521680	501165	7265665	Grid	15	100	1	0	85

Talisman Great Bear Plains Survey
Model Probability Values

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ID	MODULE #	Easting	Northing	Status	Cluster Group	Model Tweed Lake M-47	Model Cluster 13	Model Cluster 7	Model Clusters 7 & 13
220	522012	497572	7256712	Grid	13	100	100	91	100
221	521715	501671	7265686	Grid	15	0	0	0	0
222	521727	496567	7256901	Grid	3	0	0	47	78
223	521277	499692	7265776	Grid	15	90	0	0	4
224	521931	503180	7265805	Grid	17	95	100	99	88
225	521472	499554	7256353	Grid	15	100	0	0	0
226	521776	498133	7256592	Grid	11	100	0	100	0
227	521467	495089	7257176	Grid	15	100	0	0	0
228	521414	497077	7256808	Grid	15	78	0	0	11
229	521797	496074	7256986	Grid	15	19	0	1	0
230	521591	502175	7265737	Grid	13	93	100	56	100
231	521960	495577	7257061	Grid	15	64	0	57	90
232	521956	500704	7265700	Grid	13	96	100	90	100
233	521322	483466	7262401	Grid	15	0	0	12	75
234	521962	506927	7254775	Grid	15	19	0	0	2
235	521906	503686	7265836	Grid	15	58	0	0	7
236	521749	502968	7255477	Grid	15	73	0	0	3
237	521771	503961	7255346	Grid	15	0	0	5	56
238	521320	483936	7262597	Grid	15	98	0	0	1
239	521360	503454	7255423	Grid	15	0	0	3	16
240	521764	485776	7263489	Grid	1	1	0	3	13
241	521934	500470	7255984	Grid	15	1	0	4	29
242	521276	500959	7255885	Grid	15	4	0	0	0
243	521596	505953	7255006	Grid	15	78	0	0	28
244	521748	502461	7255529	Grid	18	0	100	99	100
245	521844	504474	7255263	Grid	17	90	94	83	97
246	521468	484409	7262797	Grid	15	92	0	0	0
247	521628	485331	7263228	Grid	7	0	2	100	100
248	521643	483008	7262180	Grid	15	0	0	10	20
249	521408	505473	7255091	Grid	15	100	1	3	78
250	521439	504981	7255170	Grid	15	98	0	2	92
251	521738	484870	7262992	Grid	15	0	0	0	0
252	521946	501458	7255777	Grid	15	2	0	0	0
253	521963	504199	7265861	Grid	15	81	0	41	88
254	521380	501971	7255595	Grid	15	89	0	0	74
255	522007	506434	7254902	Grid	12	100	14	41	100
256	521512	496181	7264986	Grid	15	0	0	0	0
257	521473	496848	7266643	Grid	15	13	0	0	3
258	521292	488216	7264907	Grid	1	0	87	100	99
259	521352	487544	7264524	Grid	15	0	0	0	0
260	521774	495682	7263507	Grid	17	0	0	2	4

Talisman Great Bear Plains Survey
Model Probability Values

INDEX						Probability Value	Probability Value	Probability Value	Probability Value
ID	MODULE #	Easting	Northing	Status	Cluster Group	Model Tweed Lake M-47	Model Cluster 13	Model Cluster 7	Model Clusters 7 & 13
261	521270	489589	7265518	Grid	17	0	100	6	34
262	521687	488677	7265134	Grid	17	0	2	97	100
263	521401	495940	7264237	Grid	15	0	0	0	2
264	521697	495577	7263251	Grid	7	0	0	100	100
265	521930	497137	7267306	Grid	19	90	100	0	0
266	521413	497040	7267088	Grid	1	0	0	1	73
267	521726	488446	7265022	Grid	17	1	100	77	65
268	521856	485995	7263621	Grid	15	0	0	60	14
269	521798	496752	7266417	Grid	17	0	100	0	0
270	521969	496257	7265223	Grid	1	0	0	96	100
271	521772	496369	7265498	Grid	15	0	0	0	1
272	521519	486886	7264135	Grid	15	0	0	0	2
273	521604	489861	7266287	Grid	17	0	100	15	1
274	521325	489674	7266122	Grid	15	4	0	0	12
275	521621	486440	7263873	Grid	15	100	95	99	99
276	521421	496947	7266872	Grid	15	2	0	0	0
277	521338	496552	7265939	Grid	15	24	0	0	0
278	521886	487325	7264393	Grid	17	17	100	79	82
279	521601	496105	7264740	Grid	15	12	0	2	74
280	521456	487107	7264266	Grid	15	0	0	54	29
281	521266	490082	7266154	Grid	15	99	0	0	0
282	521777	488900	7265244	Grid	15	3	0	0	14
283	521444	487985	7264782	Grid	17	1	100	99	90
284	521646	495362	7262805	Grid	15	7	0	10	95
285	521559	489842	7265628	Grid	17	0	100	8	6
286	521287	487766	7264653	Grid	17	11	100	100	98
287	521724	489146	7265322	Grid	15	37	59	99	100
288	521911	495787	7263740	Grid	15	1	0	0	1
289	521734	497235	7267530	Grid	15	100	0	0	0
290	521968	490240	7265950	Grid	15	98	99	79	27
291	521970	496463	7265720	Grid	17	4	100	0	0
292	521295	486207	7263736	Grid	15	78	0	0	0
293	521504	486652	7264016	Grid	15	4	0	0	0
294	521275	496016	7264471	Grid	17	9	0	12	0
295	521386	489771	7265874	Grid	15	77	0	6	0
296	521852	496657	7266185	Grid	15	100	0	0	0
297	521830	495866	7264000	Grid	15	100	0	0	42
298	521940	489341	7265473	Grid	15	87	0	0	0
299	521739	498972	7270251	Grid	15	0	0	0	0
300	521314	497751	7268666	Grid	1	1	0	71	92
301	521707	491650	7266531	Grid	7	0	0	100	100

Talisman Great Bear Plains Survey
Model Probability Values

INDEX						Probability Value	Probability Value	Probability Value	Probability Value
ID	MODULE #	Easting	Northing	Status	Cluster Group	Model Tweed Lake M-47	Model Cluster 13	Model Cluster 7	Model Clusters 7 & 13
302	521283	498242	7269234	Grid	19	0	100	0	0
303	521558	499557	7271544	Grid	15	0	0	0	0
304	521555	491179	7266355	Grid	15	96	0	93	87
305	521651	497332	7267761	Grid	19	0	100	0	0
306	521511	493140	7267106	Grid	17	0	99	1	2
307	522005	498869	7270017	Grid	17	0	100	0	0
308	521265	492141	7266711	Grid	15	97	2	90	97
309	521364	492405	7266781	Grid	15	100	0	0	0
310	521575	499057	7270483	Grid	17	0	99	0	0
311	521807	490052	7265821	Grid	5	37	0	100	100
312	521594	498593	7269603	Grid	17	0	0	15	0
313	521543	497546	7268217	Grid	17	0	100	0	0
314	521598	491413	7266444	Grid	15	66	0	0	95
315	521474	497910	7268854	Grid	15	100	99	0	7
316	521535	490451	7266015	Grid	1	0	0	100	100
317	521443	499620	7271782	Grid	15	20	0	1	3
318	521394	499478	7271304	Grid	17	0	0	0	0
319	521339	493399	7267175	Grid	15	0	0	0	14
320	521343	499228	7270881	Grid	17	0	95	0	0
321	521732	499706	7272000	Grid	15	100	0	0	92
322	521670	498736	7269803	Grid	15	100	0	0	0
323	521602	492634	7266894	Grid	15	36	0	0	0
324	521792	492896	7266990	Grid	17	1	16	9	1
325	521618	497639	7268444	Grid	19	0	100	0	0
326	521381	498087	7269030	Grid	1	12	0	94	47
327	521873	490941	7266256	Grid	15	0	0	100	100
328	521664	499351	7271095	Grid	17	0	98	0	0
329	521665	498411	7269408	Grid	17	0	100	0	25
330	521898	490679	7266129	Grid	7	0	4	100	100
331	521855	497430	7267988	Grid	15	77	0	0	0
332	521802	491906	7266625	Grid	17	41	37	53	5
333	521488	494096	7267526	Grid	17	0	99	0	1
334	521279	495669	7268752	Grid	17	0	55	0	0
335	521642	500966	7274640	Grid	15	2	0	0	33
336	521669	494880	7268192	Grid	15	2	7	0	0
337	521362	500018	7272727	Grid	14	0	2	4	1
338	521722	500617	7273977	Grid	17	0	0	2	7
339	521286	496480	7269173	Grid	15	0	4	1	0
340	521705	499809	7272279	Grid	7	0	0	100	100
341	521255	500344	7273403	Grid	1	0	0	1	32
342	521991	494297	7267698	Grid	17	0	100	0	1

Talisman Great Bear Plains Survey
Model Probability Values

INDEX						Probability Value	Probability Value	Probability Value	Probability Value
ID	MODULE #	Easting	Northing	Status	Cluster Group	Model Tweed Lake M-47	Model Cluster 13	Model Cluster 7	Model Clusters 7 & 13
343	521831	495891	7268869	Grid	1	98	0	2	4
344	521760	495012	7268302	Grid	17	0	2	4	0
345	521332	500131	7272959	Grid	17	0	1	21	1
346	521682	501110	7274838	Grid	17	0	0	0	1
348	521524	495435	7268646	Grid	15	96	2	1	10
349	521866	499911	7272504	Grid	15	99	3	97	100
350	521942	501256	7275046	Grid	15	3	0	7	96
351	521298	500217	7273185	Grid	17	0	0	20	97
352	521515	501544	7275550	Grid	14	0	0	31	0
353	521743	500728	7274205	Grid	15	0	0	0	4
354	521965	496226	7269214	Grid	7	4	0	100	99
355	521957	495210	7268469	Grid	17	89	53	25	0
356	521843	494689	7268030	Grid	15	100	0	0	0
357	521742	501409	7275281	Grid	15	63	0	1	1
358	521773	500831	7274429	Grid	15	100	0	1	3
359	521947	493883	7267392	Grid	17	99	0	98	0
360	521815	493642	7267271	Grid	15	96	0	34	57
361	521655	496125	7268980	Grid	15	57	3	3	1
362	521936	500424	7273634	Grid	1	0	0	12	5
363	521528	499610	7271709	Grid	15	0	0	1	0
364	521671	501911	7276337	Grid	15	0	0	0	1
365	521379	499407	7271169	Grid	17	0	0	0	0
366	521631	502268	7276991	Grid	15	88	0	0	0
367	521685	497357	7269687	Grid	15	100	0	0	0
368	521820	502513	7277438	Grid	15	9	0	0	3
369	521905	497979	7270154	Grid	15	92	0	6	78
370	521306	499391	7270740	Grid	8	0	100	0	1
371	521864	502246	7277918	Grid	1	2	0	0	3
372	521262	496715	7269266	Grid	15	83	0	1	0
373	521884	498969	7270490	Grid	17	46	100	0	49
374	521350	502142	7276761	Grid	1	0	0	10	99
375	521871	499524	7271461	Grid	15	9	1	0	4
376	521733	497153	7269534	Grid	17	0	100	2	4
377	521616	499217	7270557	Grid	15	11	0	0	1
378	521928	496948	7269384	Grid	15	99	0	0	0
379	521349	501786	7276099	Grid	15	62	0	0	1
380	521341	501703	7275831	Grid	15	0	0	0	8
381	521321	502764	7277904	Grid	14	1	10	0	60
382	521996	497572	7269847	Grid	17	0	94	6	0
383	521526	502483	7277833	Grid	14	0	2	0	35
384	521326	502392	7277209	Grid	17	56	11	0	4

Talisman Great Bear Plains Survey
Model Probability Values

INDEX						Probability Value	Probability Value	Probability Value	Probability Value
ID	MODULE #	Easting	Northing	Status	Cluster Group	Model Tweed Lake M-47	Model Cluster 13	Model Cluster 7	Model Clusters 7 & 13
385	521539	502025	7276540	Grid	15	0	0	0	14
386	521766	499271	7270968	Grid	14	0	2	0	0
388	521652	502657	7277691	Grid	14	1	16	0	0
389	521503	498216	7270287	Grid	2	0	0	0	0
390	521759	498725	7270384	Grid	15	100	100	100	100
391	521567	500494	7278498	Grid	15	0	0	0	0
392	521545	496304	7279747	Grid	15	0	0	0	0
393	521914	501017	7278336	Grid	15	2	0	1	1
394	521972	497033	7279409	Grid	14	0	0	0	0
395	521795	500258	7278577	Grid	14	0	62	0	7
396	521510	499273	7278844	Grid	11	5	71	1	0
397	521455	497781	7279197	Grid	15	0	0	0	0
398	521694	501529	7278159	Grid	15	0	0	0	0
399	521967	501281	7278238	Grid	14	0	6	0	0
400	521713	498522	7279012	Grid	17	0	0	0	0
401	521367	496795	7279426	Grid	14	0	0	0	0
402	521833	496597	7279592	Grid	15	0	0	0	1
403	521679	502019	7277997	Grid	10	0	34	0	0
404	521593	498276	7279064	Grid	14	1	29	0	10
405	521300	499773	7278735	Grid	15	3	0	2	10
406	521649	501779	7278077	Grid	14	6	34	0	4
407	521415	499019	7278902	Grid	15	96	0	1	1
408	521896	498026	7279132	Grid	15	22	0	0	2
409	521841	498767	7278960	Grid	17	4	1	0	0
410	521462	499519	7278791	Grid	17	0	44	0	0
411	521973	497547	7279266	Grid	15	93	0	0	0
412	521327	500765	7278409	Grid	14	0	96	0	6
413	521388	500013	7278656	Grid	14	78	2	0	0
414	521619	497288	7279335	Grid	15	99	0	1	0
415	521493	495017	7243814	Grid	17	0	0	0	0
416	521654	493362	7243097	Grid	12	0	0	0	0
417	521441	494078	7243407	Grid	1	5	0	79	27
418	521788	492311	7242615	Grid	15	0	0	0	0
419	521514	493024	7242939	Grid	1	0	0	69	2
420	521425	494800	7243722	Grid	15	8	0	0	0
421	521994	492790	7242832	Grid	6	88	0	100	99
422	521571	493838	7243307	Grid	15	0	0	21	0
423	521812	494551	7243613	Grid	15	1	0	3	91
424	521784	493599	7243203	Grid	15	0	0	0	0
425	521311	492551	7242726	Grid	6	73	0	100	100
426	521588	494311	7243506	Grid	17	85	0	3	0

Talisman Great Bear Plains Survey
Model Probability Values

INDEX						Probability Value	Probability Value	Probability Value	Probability Value
ID	MODULE #	Easting	Northing	Status	Cluster Group	Model Tweed Lake M-47	Model Cluster 13	Model Cluster 7	Model Clusters 7 & 13
501	521533	371548	7427402	Grid	#N/A	90	#N/A	#N/A	#N/A
502	521385	372009	7427690	Grid	#N/A	100	#N/A	#N/A	#N/A
503	521617	372445	7427965	Grid	#N/A	92	#N/A	#N/A	#N/A
504	521546	372893	7428245	Grid	#N/A	100	#N/A	#N/A	#N/A
505	521634	373326	7428526	Grid	#N/A	66	#N/A	#N/A	#N/A
506	521763	373780	7428812	Grid	#N/A	95	#N/A	#N/A	#N/A
507	521953	374204	7429076	Grid	#N/A	96	#N/A	#N/A	#N/A
508	521806	374612	7429329	Grid	#N/A	0	#N/A	#N/A	#N/A
509	521768	374817	7429466	Grid	#N/A	75	#N/A	#N/A	#N/A
510	521438	375034	7429595	Grid	#N/A	54	#N/A	#N/A	#N/A
511	521259	375250	7429743	Grid	#N/A	0	#N/A	#N/A	#N/A
512	521376	375463	7429873	Grid	#N/A	36	#N/A	#N/A	#N/A
513	521976	375689	7430012	Grid	#N/A	6	#N/A	#N/A	#N/A
514	521945	375901	7430150	Grid	#N/A	70	#N/A	#N/A	#N/A
515	521789	376111	7430280	Grid	#N/A	7	#N/A	#N/A	#N/A
516	521299	376299	7430396	Grid	#N/A	3	#N/A	#N/A	#N/A
517	521346	376501	7430530	Grid	#N/A	0	#N/A	#N/A	#N/A
518	521548	376710	7430659	Grid	#N/A	0	#N/A	#N/A	#N/A
1001	521607	484849	7303834	Model	15	0	0	0	1
1002	521902	484880	7303779	Model	15	0	0	0	0
1003	521572	484869	7303793	Model	17	0	10	0	0
1004	521662	484929	7303760	Model	17	2	0	0	0
1005	521918	484851	7303889	Model	15	12	0	0	0
1006	521758	484956	7303781	Model	15	0	0	0	0
1007	521460	484858	7303818	Model	15	0	0	0	0
1008	521324	484978	7303815	Model	12	0	0	99	100
1009	521746	484849	7303871	Model	15	0	0	0	0
1010	521836	484945	7303764	Model	17	2	17	0	0
1011	521939	484893	7303768	Model	15	2	0	0	0
1012	521709	484852	7303851	Model	7	0	0	100	100
1013	521904	484969	7303798	Model	15	19	0	1	3
1014	521291	484910	7303759	Model	15	1	0	1	0
1015	521629	484863	7303803	Model	15	5	0	0	0
2001	521293	628260	7436359	Model	#N/A	0	#N/A	#N/A	#N/A
2002	521659	628462	7436359	Model	#N/A	0	#N/A	#N/A	#N/A
2003	521922	628267	7436340	Model	#N/A	49	#N/A	#N/A	#N/A
2004	521740	628439	7436318	Model	#N/A	78	#N/A	#N/A	#N/A
2005	521987	628290	7436386	Model	#N/A	0	#N/A	#N/A	#N/A
2006	521605	628451	7436332	Model	#N/A	15	#N/A	#N/A	#N/A
2007	521523	628386	7436268	Model	#N/A	94	#N/A	#N/A	#N/A
2008	521867	628316	7436290	Model	#N/A	0	#N/A	#N/A	#N/A

Talisman Great Bear Plains Survey
Model Probability Values

INDEX						Probability Value	Probability Value	Probability Value	Probability Value
ID	MODULE #	Easting	Northing	Status	Cluster Group	Model Tweed Lake M-47	Model Cluster 13	Model Cluster 7	Model Clusters 7 & 13
2009	521615	628418	7436281	Model	#N/A	0	#N/A	#N/A	#N/A
2010	521344	628359	7436262	Model	#N/A	1	#N/A	#N/A	#N/A
2011	521284	628312	7436402	Model	#N/A	1	#N/A	#N/A	#N/A
2012	521890	628289	7436323	Model	#N/A	5	#N/A	#N/A	#N/A
2013	521483	628330	7436277	Model	#N/A	2	#N/A	#N/A	#N/A
3001	521750	373009	7428422	Model	#N/A	90	#N/A	#N/A	#N/A
3002	521570	373189	7428345	Model	#N/A	81	#N/A	#N/A	#N/A
3003	521720	373086	7428282	Model	#N/A	99	#N/A	#N/A	#N/A
3004	521280	373130	7428306	Model	#N/A	73	#N/A	#N/A	#N/A
3005	521568	373008	7428410	Model	#N/A	100	#N/A	#N/A	#N/A
3006	521921	373195	7428387	Model	#N/A	28	#N/A	#N/A	#N/A
3007	521822	373171	7428335	Model	#N/A	100	#N/A	#N/A	#N/A
3008	521686	373186	7428398	Model	#N/A	32	#N/A	#N/A	#N/A
3010	522010	373108	7428294	Model	#N/A	81	#N/A	#N/A	#N/A
3011	521457	373208	7428366	Model	#N/A	71	#N/A	#N/A	#N/A
3012	521988	373148	7428318	Model	#N/A	98	#N/A	#N/A	#N/A
3013	521857	373032	7428359	Model	#N/A	82	#N/A	#N/A	#N/A
3014	521910	373072	7428299	Model	#N/A	100	#N/A	#N/A	#N/A
3015	521850	373202	7428351	Model	#N/A	100	#N/A	#N/A	#N/A
Losh Lake	Losh Lake			P&A	#N/A	0		0	0
Tweed Lake	Tweed Lake C12			P&A	#N/A	1	#N/A	#N/A	#N/A
Tweed Lake	Tweed Lake M47			GAS	#N/A	86	#N/A	#N/A	#N/A

Talisman Great Bear Plains Survey
Field Information

Deline, NWT

Sample Database

<u>NOTES</u>	<u>Coordinate Info</u>	<u>PERSONNEL</u>	<u>Models</u>
		JI=Jason Innes RF=Ryan Fischer	
l=lost d1=potentially disturbed d2=severely disturbed x=destroyed m=model b=blank EXP=Exposure Time (days)	UTM Zone 10 NAD 83	<u>SUMMARY INFO</u> 0 Total Models 0 Total Blanks 0 Total Samples 17.0 Average Exposure 7 Total Lost 0 Total d2	Losh Lk G-; Tweed Lk M NW Tweed Lk

Sent Modules	Module #	Easting	Northing	Initials	Date Ent.	Initials	Date Rec.	Notes	EXP
	521502	488677	7245042	ji/rf	21-Feb-07	RF	11. Mar. 2007		18
	521574	488463	7245195	ji/rf	21-Feb-07	RF	11. Mar. 2007		18
	521630	489159	7244856	ji/rf	21-Feb-07	RF	11. Mar. 2007		18
	521706	488909	7244960	ji/rf	21-Feb-07	RF	11. Mar. 2007		18
	521894	489594	7244666	ji/rf	21-Feb-07	RF	11. Mar. 2007	L	18
	521938	489368	7244767	ji/rf	21-Feb-07	RF	11. Mar. 2007		18
	521290	492828	7243350	ji/rf	22-Feb-07	RF	11. Mar. 2007		17
	521396	490052	7244483	ji/rf	22-Feb-07	RF	11. Mar. 2007		17
	521431	492364	7243541	ji/rf	22-Feb-07	RF	11. Mar. 2007		17
	521449	491921	7243719	ji/rf	22-Feb-07	RF	11. Mar. 2007		17
	521454	492614	7243435	ji/rf	22-Feb-07	RF	11. Mar. 2007		17
	521487	490307	7244381	ji/rf	22-Feb-07	RF	11. Mar. 2007		17
	521531	491225	7244012	ji/rf	22-Feb-07	RF	11. Mar. 2007		17
	521538	490749	7244201	ji/rf	22-Feb-07	RF	11. Mar. 2007		17
	521557	490986	7244107	ji/rf	22-Feb-07	RF	11. Mar. 2007		17
	521625	492150	7243625	ji/rf	22-Feb-07	RF	11. Mar. 2007		17
	521882	491687	7243819	ji/rf	22-Feb-07	RF	11. Mar. 2007		17
	521932	490526	7244290	ji/rf	22-Feb-07	RF	11. Mar. 2007		17
	521985	489822	7244584	ji/rf	22-Feb-07	RF	11. Mar. 2007		17
	521993	491436	7243923	ji/rf	22-Feb-07	RF	11. Mar. 2007		17
	521260	497667	7241377	ji/rf	24-Feb-07	Ji	13. Mar. 2007		17
	521267	494683	7242596	ji/rf	24-Feb-07	Ji	13. Mar. 2007		17
	521303	496084	7242036	ji/rf	24-Feb-07	Ji	13. Mar. 2007		17
	521337	493553	7243059	ji/rf	24-Feb-07	Ji	13. Mar. 2007		17
	521348	496525	7241862	ji/rf	24-Feb-07	Ji	13. Mar. 2007		17
	521393	494464	7242688	ji/rf	24-Feb-07	Ji	13. Mar. 2007		17
	521432	495383	7242313	ji/rf	24-Feb-07	Ji	13. Mar. 2007		17
	521442	497234	7241585	ji/rf	24-Feb-07	Ji	13. Mar. 2007		17
	521463	494914	7242504	ji/rf	24-Feb-07	Ji	13. Mar. 2007		17
	521482	496300	7241954	ji/rf	24-Feb-07	Ji	13. Mar. 2007		17
	521507	497006	7241690	ji/rf	24-Feb-07	Ji	13. Mar. 2007		17
	521516	497464	7241473	ji/rf	24-Feb-07	Ji	13. Mar. 2007	L	17
	521547	493759	7242972	ji/rf	24-Feb-07	Ji	13. Mar. 2007		17
	521564	498385	7241117	ji/rf	24-Feb-07	Ji	13. Mar. 2007		17
	521582	493995	7242880	ji/rf	24-Feb-07	Ji	13. Mar. 2007		17
	521611	496767	7241787	ji/rf	24-Feb-07	Ji	13. Mar. 2007		17

Talisman Great Bear Plains Survey
Field Information

Sent Modules	Module #	Easting	Northing	Initials	Date Ent.	Initials	Date Rec.	Notes	EXP
	521620	498146	7241209	ji/rf	24-Feb-07	Ji	13. Mar. 2007		17
	521641	498624	7241016	ji/rf	24-Feb-07	Ji	13. Mar. 2007		17
	521644	493293	7243163	ji/rf	24-Feb-07	Ji	13. Mar. 2007		17
	521693	494231	7242780	ji/rf	24-Feb-07	Ji	13. Mar. 2007		17
	521698	493059	7243251	ji/rf	24-Feb-07	Ji	13. Mar. 2007		17
	521708	495618	7242212	ji/rf	24-Feb-07	Ji	13. Mar. 2007		17
	521714	497902	7241297	ji/rf	24-Feb-07	Ji	13. Mar. 2007		17
	521737	495153	7242404	ji/rf	24-Feb-07	Ji	13. Mar. 2007		17
	521770	495860	7242116	ji/rf	24-Feb-07	Ji	13. Mar. 2007		17
	521859	498858	7240923	ji/rf	24-Feb-07	Ji	13. Mar. 2007		17
	521897	499067	7240834	ji/rf	24-Feb-07	Ji	13. Mar. 2007		17
	522009	504141	7238740	ji/rf	25-Feb-07	Ji	14. Mar. 2007		17
	521281	504577	7238563	ji/rf	25-Feb-07	Ji	14. Mar. 2007		17
	521551	502791	7239294	ji/rf	25-Feb-07	Ji	14. Mar. 2007		17
	521569	505086	7238350	ji/rf	25-Feb-07	Ji	14. Mar. 2007		17
	521580	500461	7240258	ji/rf	25-Feb-07	Ji	14. Mar. 2007		17
	521650	501392	7239873	ji/rf	25-Feb-07	Ji	14. Mar. 2007		17
	521689	500921	7240068	ji/rf	25-Feb-07	Ji	14. Mar. 2007		17
	521752	499984	7240452	ji/rf	25-Feb-07	Ji	14. Mar. 2007		17
	521803	499300	7240734	ji/rf	25-Feb-07	Ji	14. Mar. 2007		17
	521870	501851	7239681	ji/rf	25-Feb-07	Ji	14. Mar. 2007		17
	521874	505525	7238174	ji/rf	25-Feb-07	Ji	14. Mar. 2007		17
	521887	499588	7240625	ji/rf	25-Feb-07	Ji	14. Mar. 2007		17
	521900	503265	7239102	ji/rf	25-Feb-07	Ji	14. Mar. 2007		17
	521929	503717	7238914	ji/rf	25-Feb-07	Ji	14. Mar. 2007		17
	521981	502312	7239495	ji/rf	25-Feb-07	Ji	14. Mar. 2007		17
	522013	506000	7237977	ji/rf	25-Feb-07	Ji	14. Mar. 2007		17
	521261	486826	7259050	ji/rf	26-Feb-07	Ji	15. Mar. 2007		17
	521272	487325	7258994	ji/rf	26-Feb-07	Ji	15. Mar. 2007		17
	521288	485328	7259214	ji/rf	26-Feb-07	Ji	15. Mar. 2007		17
	521294	483383	7259780	ji/rf	26-Feb-07	Ji	15. Mar. 2007		17
	521387	484353	7259460	ji/rf	26-Feb-07	Ji	15. Mar. 2007		17
	521584	488770	7258584	ji/rf	26-Feb-07	Ji	15. Mar. 2007	L	17
	521600	490218	7258202	ji/rf	26-Feb-07	Ji	15. Mar. 2007		17
	521627	484826	7259280	ji/rf	26-Feb-07	Ji	15. Mar. 2007		17
	521808	490724	7258117	ji/rf	26-Feb-07	Ji	15. Mar. 2007		17
	521832	486328	7259105	ji/rf	26-Feb-07	Ji	15. Mar. 2007		17
	521883	487817	7258872	ji/rf	26-Feb-07	Ji	15. Mar. 2007		17
	521885	485825	7259161	ji/rf	26-Feb-07	Ji	15. Mar. 2007		17
	521903	489249	7258428	ji/rf	26-Feb-07	Ji	15. Mar. 2007		17
	521961	483872	7259648	ji/rf	26-Feb-07	Ji	15. Mar. 2007		17
	521257	491341	7264979	ji/rf	27-Feb-07	RF	16. Mar. 2007		17
	521268	488814	7264883	ji/rf	27-Feb-07	RF	16. Mar. 2007		17
	521302	488307	7264868	ji/rf	27-Feb-07	RF	16. Mar. 2007		17
	521347	489790	7264845	ji/rf	27-Feb-07	RF	16. Mar. 2007		17
	521382	492848	7265033	ji/rf	27-Feb-07	RF	16. Mar. 2007		17
	521423	487245	7264830	ji/rf	27-Feb-07	RF	16. Mar. 2007		17
	521428	489321	7264903	ji/rf	27-Feb-07	RF	16. Mar. 2007		17
	521478	490303	7264880	ji/rf	27-Feb-07	RF	16. Mar. 2007		17
	521486	486763	7264814	ji/rf	27-Feb-07	RF	16. Mar. 2007		17
	521520	485277	7264701	ji/rf	27-Feb-07	RF	16. Mar. 2007	D1	17
	521573	493325	7265153	ji/rf	27-Feb-07	RF	16. Mar. 2007		17
	521606	484782	7264669	ji/rf	27-Feb-07	RF	16. Mar. 2007		17
	521613	490860	7264939	ji/rf	27-Feb-07	RF	16. Mar. 2007		17
	521667	485783	7264743	ji/rf	27-Feb-07	RF	16. Mar. 2007		17
	521755	483781	7264648	ji/rf	27-Feb-07	RF	16. Mar. 2007		17
	521778	492353	7265021	ji/rf	27-Feb-07	RF	16. Mar. 2007		17

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	521810	484291	7264661	ji/rf	27-Feb-07	RF	16. Mar. 2007		17
	521842	491839	7265031	ji/rf	27-Feb-07	RF	16. Mar. 2007		17
	521849	487747	7264850	ji/rf	27-Feb-07	RF	16. Mar. 2007		17
	521975	493775	7265337	ji/rf	27-Feb-07	RF	16. Mar. 2007		17
	521982	486274	7264780	ji/rf	27-Feb-07	RF	16. Mar. 2007		17
	521263	491722	7257947	JI	28-Feb-07	RF	18. Mar. 2007	X	18
	521331	495225	7265747	RF	28-Feb-07	RF	18. Mar. 2007		18
	521335	494236	7265495	RF	28-Feb-07	RF	18. Mar. 2007		18
	521366	494724	7265663	RF	28-Feb-07	RF	18. Mar. 2007		18
	521446	489730	7258285	JI	28-Feb-07	RF	18. Mar. 2007	L	18
	521453	496701	7265792	RF	28-Feb-07	RF	18. Mar. 2007		18
	521469	492694	7257785	JI	28-Feb-07	RF	18. Mar. 2007		18
	521527	493656	7257565	JI	28-Feb-07	RF	18. Mar. 2007		18
	521553	496204	7265813	RF	28-Feb-07	RF	18. Mar. 2007		18
	521614	495741	7265817	RF	28-Feb-07	RF	18. Mar. 2007		18
	521636	498177	7265806	RF	28-Feb-07	RF	18. Mar. 2007		18
	521656	492201	7257863	JI	28-Feb-07	RF	18. Mar. 2007		18
	521661	491229	7258032	JI	28-Feb-07	RF	18. Mar. 2007		18
	521692	493198	7257686	JI	28-Feb-07	RF	18. Mar. 2007		18
	521754	497209	7265790	RF	28-Feb-07	RF	18. Mar. 2007		18
	521818	497708	7265807	RF	28-Feb-07	RF	18. Mar. 2007		18
	521889	494143	7257443	JI	28-Feb-07	RF	18. Mar. 2007		18
	521986	488277	7258709	JI	28-Feb-07	RF	18. Mar. 2007		18
	521277	499692	7265776	RF	01-Mar-07	RF	18. Mar. 2007		17
	521414	497077	7256808	JI	01-Mar-07	RF	18. Mar. 2007		17
	521433	498571	7256467	JI	01-Mar-07	RF	18. Mar. 2007		17
	521447	499187	7265785	RF	01-Mar-07	RF	18. Mar. 2007		17
	521467	495089	7257176	JI	01-Mar-07	RF	18. Mar. 2007		17
	521472	499554	7256353	JI	01-Mar-07	RF	18. Mar. 2007		17
	521477	499043	7256342	JI	01-Mar-07	RF	18. Mar. 2007		17
	521536	498676	7265799	RF	01-Mar-07	RF	18. Mar. 2007		17
	521591	502175	7265737	RF	01-Mar-07	RF	18. Mar. 2007		17
	521637	499995	7256119	JI	01-Mar-07	RF	18. Mar. 2007		17
	521680	501165	7265665	RF	01-Mar-07	RF	18. Mar. 2007		17
	521715	501671	7265686	RF	01-Mar-07	RF	18. Mar. 2007		17
	521716	494621	7257309	JI	01-Mar-07	RF	18. Mar. 2007	L	17
	521727	496567	7256901	JI	01-Mar-07	RF	18. Mar. 2007		17
	521776	498133	7256592	JI	01-Mar-07	RF	18. Mar. 2007		17
	521787	502674	7265771	RF	01-Mar-07	RF	18. Mar. 2007		17
	521797	496074	7256986	JI	01-Mar-07	RF	18. Mar. 2007		17
	521838	500200	7265735	RF	01-Mar-07	RF	18. Mar. 2007		17
	521931	503180	7265805	RF	01-Mar-07	RF	18. Mar. 2007		17
	521956	500704	7265700	RF	01-Mar-07	RF	18. Mar. 2007		17
	521960	495577	7257061	JI	01-Mar-07	RF	18. Mar. 2007		17
	522012	497572	7256712	JI	01-Mar-07	RF	18. Mar. 2007		17
	521276	500959	7255885	JI	02-Mar-07	RF	20. Mar. 2007		18
	521320	483936	7262597	RF	02-Mar-07	RF	20. Mar. 2007		18
	521322	483466	7262401	RF	02-Mar-07	RF	20. Mar. 2007		18
	521360	503454	7255423	JI	02-Mar-07	RF	20. Mar. 2007		18
	521380	501971	7255595	JI	02-Mar-07	RF	20. Mar. 2007		18
	521408	505473	7255091	JI	02-Mar-07	RF	20. Mar. 2007		18
	521439	504981	7255170	JI	02-Mar-07	RF	20. Mar. 2007		18
	521468	484409	7262797	RF	02-Mar-07	RF	20. Mar. 2007		18
	521596	505953	7255006	JI	02-Mar-07	RF	20. Mar. 2007		18
	521628	485331	7263228	RF	02-Mar-07	RF	20. Mar. 2007		18
	521643	483008	7262180	RF	02-Mar-07	RF	20. Mar. 2007		18
	521738	484870	7262992	RF	02-Mar-07	RF	20. Mar. 2007		18

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	521748	502461	7255529	JI	02-Mar-07	RF	20. Mar. 2007		18
	521749	502968	7255477	JI	02-Mar-07	RF	20. Mar. 2007		18
	521764	485776	7263489	RF	02-Mar-07	RF	20. Mar. 2007		18
	521771	503961	7255346	JI	02-Mar-07	RF	20. Mar. 2007		18
	521844	504474	7255263	JI	02-Mar-07	RF	20. Mar. 2007		18
	521906	503686	7265836	RF	02-Mar-07	RF	20. Mar. 2007		18
	521934	500470	7255984	JI	02-Mar-07	RF	20. Mar. 2007		18
	521946	501458	7255777	JI	02-Mar-07	RF	20. Mar. 2007		18
	521962	506927	7254775	JI	02-Mar-07	RF	20. Mar. 2007		18
	521963	504199	7265861	RF	02-Mar-07	RF	20. Mar. 2007		18
	522007	506434	7254902	JI	02-Mar-07	RF	20. Mar. 2007		18
	521266	490082	7266154	RF	03-Mar-07	RF	21. Mar. 2007		18
	521270	489589	7265518	RF	03-Mar-07	RF	21. Mar. 2007		18
	521275	496016	7264471	JI	03-Mar-07	RF	21. Mar. 2007		18
	521287	487766	7264653	RF	03-Mar-07	RF	21. Mar. 2007		18
	521292	488216	7264907	RF	03-Mar-07	RF	21. Mar. 2007		18
	521295	486207	7263736	RF	03-Mar-07	RF	21. Mar. 2007		18
	521325	489674	7266122	RF	03-Mar-07	RF	21. Mar. 2007		18
	521338	496552	7265939	JI	03-Mar-07	RF	21. Mar. 2007		18
	521352	487544	7264524	RF	03-Mar-07	RF	21. Mar. 2007		18
	521386	489771	7265874	RF	03-Mar-07	RF	21. Mar. 2007		18
	521401	495940	7264237	JI	03-Mar-07	RF	21. Mar. 2007		18
	521413	497040	7267088	JI	03-Mar-07	RF	21. Mar. 2007		18
	521421	496947	7266872	JI	03-Mar-07	RF	21. Mar. 2007		18
	521444	487985	7264782	RF	03-Mar-07	RF	21. Mar. 2007		18
	521456	487107	7264266	RF	03-Mar-07	RF	21. Mar. 2007		18
	521473	496848	7266643	JI	03-Mar-07	RF	21. Mar. 2007		18
	521504	486652	7264016	RF	03-Mar-07	RF	21. Mar. 2007		18
	521512	496181	7264986	JI	03-Mar-07	RF	21. Mar. 2007		18
	521519	486886	7264135	RF	03-Mar-07	RF	21. Mar. 2007		18
	521559	489842	7265628	RF	03-Mar-07	RF	21. Mar. 2007		18
	521601	496105	7264740	JI	03-Mar-07	RF	21. Mar. 2007		18
	521604	489861	7266287	RF	03-Mar-07	RF	21. Mar. 2007		18
	521621	486440	7263873	RF	03-Mar-07	RF	21. Mar. 2007		18
	521623	495475	7263027	JI	03-Mar-07	RF	21. Mar. 2007 L		18
	521646	495362	7262805	JI	03-Mar-07	RF	21. Mar. 2007		18
	521687	488677	7265134	RF	03-Mar-07	RF	21. Mar. 2007		18
	521697	495577	7263251	JI	03-Mar-07	RF	21. Mar. 2007		18
	521724	489146	7265322	RF	03-Mar-07	RF	21. Mar. 2007		18
	521726	488446	7265022	RF	03-Mar-07	RF	21. Mar. 2007		18
	521734	497235	7267530	JI	03-Mar-07	RF	21. Mar. 2007		18
	521772	496369	7265498	JI	03-Mar-07	RF	21. Mar. 2007		18
	521774	495682	7263507	JI	03-Mar-07	RF	21. Mar. 2007		18
	521777	488900	7265244	RF	03-Mar-07	RF	21. Mar. 2007		18
	521798	496752	7266417	JI	03-Mar-07	RF	21. Mar. 2007		18
	521830	495866	7264000	JI	03-Mar-07	RF	21. Mar. 2007		18
	521852	496657	7266185	JI	03-Mar-07	RF	21. Mar. 2007		18
	521856	485995	7263621	RF	03-Mar-07	RF	21. Mar. 2007		18
	521886	487325	7264393	RF	03-Mar-07	RF	21. Mar. 2007		18
	521911	495787	7263740	JI	03-Mar-07	RF	21. Mar. 2007		18
	521930	497137	7267306	JI	03-Mar-07	RF	21. Mar. 2007		18
	521940	489341	7265473	RF	03-Mar-07	RF	21. Mar. 2007		18
	521968	490240	7265950	RF	03-Mar-07	RF	21. Mar. 2007		18
	521969	496257	7265223	JI	03-Mar-07	RF	21. Mar. 2007		18
	521970	496463	7265720	JI	03-Mar-07	RF	21. Mar. 2007		18
	521265	492141	7266711	RF	04-Mar-07	RF	22. Mar. 2007		18
	521283	498242	7269234	JI	04-Mar-07	RF	22. Mar. 2007		18

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	521314	497751	7268666	JI	04-Mar-07	RF	22. Mar. 2007		18
	521339	493399	7267175	RF	04-Mar-07	RF	22. Mar. 2007		18
	521343	499228	7270881	JI	04-Mar-07	RF	22. Mar. 2007		18
	521364	492405	7266781	RF	04-Mar-07	RF	22. Mar. 2007		18
	521381	498087	7269030	JI	04-Mar-07	RF	22. Mar. 2007		18
	521394	499478	7271304	JI	04-Mar-07	RF	22. Mar. 2007		18
	521443	499620	7271782	JI	04-Mar-07	RF	22. Mar. 2007		18
	521474	497910	7268854	JI	04-Mar-07	RF	22. Mar. 2007		18
	521511	493140	7267106	RF	04-Mar-07	RF	22. Mar. 2007		18
	521535	490451	7266015	RF	04-Mar-07	RF	22. Mar. 2007		18
	521543	497546	7268217	JI	04-Mar-07	RF	22. Mar. 2007		18
	521555	491179	7266355	RF	04-Mar-07	RF	22. Mar. 2007		18
	521558	499557	7271544	JI	04-Mar-07	RF	22. Mar. 2007		18
	521575	499057	7270483	JI	04-Mar-07	RF	22. Mar. 2007		18
	521594	498593	7269603	JI	04-Mar-07	RF	22. Mar. 2007		18
	521598	491413	7266444	RF	04-Mar-07	RF	22. Mar. 2007		18
	521602	492634	7266894	RF	04-Mar-07	RF	22. Mar. 2007		18
	521618	497639	7268444	JI	04-Mar-07	RF	22. Mar. 2007		18
	521651	497332	7267761	JI	04-Mar-07	RF	22. Mar. 2007		18
	521664	499351	7271095	JI	04-Mar-07	RF	22. Mar. 2007		18
	521665	498411	7269408	JI	04-Mar-07	RF	22. Mar. 2007		18
	521670	498736	7269803	JI	04-Mar-07	RF	22. Mar. 2007		18
	521707	491650	7266531	RF	04-Mar-07	RF	22. Mar. 2007		18
	521732	499706	7272000	JI	04-Mar-07	RF	22. Mar. 2007		18
	521739	498972	7270251	JI	04-Mar-07	RF	22. Mar. 2007		18
	521792	492896	7266990	RF	04-Mar-07	RF	22. Mar. 2007		18
	521802	491906	7266625	RF	04-Mar-07	RF	22. Mar. 2007		18
	521807	490052	7265821	RF	04-Mar-07	RF	22. Mar. 2007		18
	521855	497430	7267988	JI	04-Mar-07	RF	22. Mar. 2007		18
	521873	490941	7266256	RF	04-Mar-07	RF	22. Mar. 2007		18
	521898	490679	7266129	RF	04-Mar-07	RF	22. Mar. 2007		18
	522005	498869	7270017	JI	04-Mar-07	RF	22. Mar. 2007		18
	521255	500344	7273403	JI	05-Mar-07	RF	24. Mar. 2007		19
	521269	494492	7267862	RF	05-Mar-07	RF	24. Mar. 2007		19
	521279	495669	7268752	RF	05-Mar-07	RF	24. Mar. 2007		19
	521286	496480	7269173	RF	05-Mar-07	RF	24. Mar. 2007		19
	521298	500217	7273185	JI	05-Mar-07	RF	24. Mar. 2007		19
	521332	500131	7272959	JI	05-Mar-07	RF	24. Mar. 2007		19
	521362	500018	7272727	JI	05-Mar-07	RF	24. Mar. 2007		19
	521488	494096	7267526	RF	05-Mar-07	RF	24. Mar. 2007		19
	521515	501544	7275550	JI	05-Mar-07	RF	24. Mar. 2007		19
	521524	495435	7268646	RF	05-Mar-07	RF	24. Mar. 2007		19
	521642	500966	7274640	JI	05-Mar-07	RF	24. Mar. 2007		19
	521655	496125	7268980	RF	05-Mar-07	RF	24. Mar. 2007		19
	521669	494880	7268192	RF	05-Mar-07	RF	24. Mar. 2007		19
	521682	501110	7274838	JI	05-Mar-07	RF	24. Mar. 2007		19
	521705	499809	7272279	JI	05-Mar-07	RF	24. Mar. 2007		19
	521722	500617	7273977	JI	05-Mar-07	RF	24. Mar. 2007		19
	521742	501409	7275281	JI	05-Mar-07	RF	24. Mar. 2007		19
	521743	500728	7274205	JI	05-Mar-07	RF	24. Mar. 2007		19
	521760	495012	7268302	RF	05-Mar-07	RF	24. Mar. 2007		19
	521773	500831	7274429	JI	05-Mar-07	RF	24. Mar. 2007		19
	521815	493642	7267271	RF	05-Mar-07	RF	24. Mar. 2007		19
	521831	495891	7268869	RF	05-Mar-07	RF	24. Mar. 2007		19
	521843	494689	7268030	RF	05-Mar-07	RF	24. Mar. 2007		19
	521866	499911	7272504	JI	05-Mar-07	RF	24. Mar. 2007		19
	521936	500424	7273634	JI	05-Mar-07	RF	24. Mar. 2007		19

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	521942	501256	7275046	Jl	05-Mar-07	RF	24. Mar. 2007		19
	521947	493883	7267392	RF	05-Mar-07	RF	24. Mar. 2007		19
	521957	495210	7268469	RF	05-Mar-07	RF	24. Mar. 2007		19
	521965	496226	7269214	RF	05-Mar-07	RF	24. Mar. 2007		19
	521991	494297	7267698	RF	05-Mar-07	RF	24. Mar. 2007		19
	521321	502764	7277904	Ji	07-Mar-07	RF	24. Mar. 2007		17
	521326	502392	7277209	Ji	07-Mar-07	RF	24. Mar. 2007		17
	521350	502142	7276761	Ji	07-Mar-07	RF	24. Mar. 2007		17
	521526	502483	7277833	Ji	07-Mar-07	RF	24. Mar. 2007		17
	521539	502025	7276540	Ji	07-Mar-07	RF	24. Mar. 2007		17
	521631	502268	7276991	Ji	07-Mar-07	RF	24. Mar. 2007		17
	521652	502657	7277691	Ji	07-Mar-07	RF	24. Mar. 2007		17
	521820	502513	7277438	Ji	07-Mar-07	RF	24. Mar. 2007		17
	521864	502246	7277918	Ji	07-Mar-07	RF	24. Mar. 2007		17
	521262	496715	7269266	RF	07-Mar-07	RF	24. Mar. 2007		17
	521306	499391	7270740	RF	07-Mar-07	RF	24. Mar. 2007		17
	521341	501703	7275831	RF	07-Mar-07	RF	24. Mar. 2007		17
	521349	501786	7276099	RF	07-Mar-07	RF	24. Mar. 2007		17
	521379	499407	7271169	RF	07-Mar-07	RF	24. Mar. 2007		17
	521503	498216	7270287	RF	07-Mar-07	RF	24. Mar. 2007		17
	521528	499610	7271709	RF	07-Mar-07	RF	24. Mar. 2007		17
	521616	499217	7270557	RF	07-Mar-07	RF	24. Mar. 2007		17
	521671	501911	7276337	RF	07-Mar-07	RF	24. Mar. 2007		17
	521685	497357	7269687	RF	07-Mar-07	RF	24. Mar. 2007		17
	521733	497153	7269534	RF	07-Mar-07	RF	24. Mar. 2007		17
	521759	498725	7270384	RF	07-Mar-07	RF	24. Mar. 2007		17
	521766	499271	7270968	RF	07-Mar-07	RF	24. Mar. 2007		17
	521786	497799	7269961	RF	07-Mar-07	RF	24. Mar. 2007	L	17
	521871	499524	7271461	RF	07-Mar-07	RF	24. Mar. 2007		17
	521884	498969	7270490	RF	07-Mar-07	RF	24. Mar. 2007		17
	521905	497979	7270154	RF	07-Mar-07	RF	24. Mar. 2007		17
	521928	496948	7269384	RF	07-Mar-07	RF	24. Mar. 2007		17
	521951	498473	7270376	RF	07-Mar-07	RF	24. Mar. 2007		17
	521996	497572	7269847	RF	07-Mar-07	RF	24. Mar. 2007		17
	521291	484910	7303759	Ji	08-Mar-07	RF	22. Mar. 2007	m.	14
	521324	484978	7303815	Ji	08-Mar-07	RF	22. Mar. 2007	m.	14
	521460	484858	7303818	Ji	08-Mar-07	RF	22. Mar. 2007	m.	14
	521572	484869	7303793	Ji	08-Mar-07	RF	22. Mar. 2007	m.	14
	521607	484849	7303834	Ji	08-Mar-07	RF	22. Mar. 2007	m.	14
	521629	484863	7303803	Ji	08-Mar-07	RF	22. Mar. 2007	m.	14
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	521746	484849	7303871	Ji	08-Mar-07	RF	22. Mar. 2007	m.	14
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	521836	484945	7303764	Ji	08-Mar-07	RF	22. Mar. 2007	m.	14
	521902	484880	7303779	Ji	08-Mar-07	RF	22. Mar. 2007	m.	14
	521904	484969	7303798	Ji	08-Mar-07	RF	22. Mar. 2007	m.	14
	521918	484851	7303889	Ji	08-Mar-07	RF	22. Mar. 2007	m.	14
	521939	484893	7303768	Ji	08-Mar-07	RF	22. Mar. 2007	m.	14
	521300	499773	7278735	RF	08-Mar-07	RF	24. Mar. 2007		16
	521327	500765	7278409	RF	08-Mar-07	RF	24. Mar. 2007		16
	521367	496795	7279426	RF	08-Mar-07	RF	24. Mar. 2007		16
	521388	500013	7278656	RF	08-Mar-07	RF	24. Mar. 2007		16
	521415	499019	7278902	RF	08-Mar-07	RF	24. Mar. 2007		16
	521455	497781	7279197	RF	08-Mar-07	RF	24. Mar. 2007		16
	521462	499519	7278791	RF	08-Mar-07	RF	24. Mar. 2007		16
	521510	499273	7278844	RF	08-Mar-07	RF	24. Mar. 2007		16

Talisman Great Bear Plains Survey
Field Information

Sent Modules	Module #	Easting	Northing	Initials	Date Ent.	Initials	Date Rec.	Notes	EXP
	521545	496304	7279747	RF	08-Mar-07	RF	24. Mar. 2007		16
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	521593	498276	7279064	RF	08-Mar-07	RF	24. Mar. 2007		16
	521619	497288	7279335	RF	08-Mar-07	RF	24. Mar. 2007		16
	521649	501779	7278077	RF	08-Mar-07	RF	24. Mar. 2007		16
	521679	502019	7277997	RF	08-Mar-07	RF	24. Mar. 2007		16
	521694	501529	7278159	RF	08-Mar-07	RF	24. Mar. 2007		16
	521713	498522	7279012	RF	08-Mar-07	RF	24. Mar. 2007		16
	521795	500258	7278577	RF	08-Mar-07	RF	24. Mar. 2007		16
	521833	496597	7279592	RF	08-Mar-07	RF	24. Mar. 2007		16
	521841	498767	7278960	RF	08-Mar-07	RF	24. Mar. 2007		16
	521896	498026	7279132	RF	08-Mar-07	RF	24. Mar. 2007		16
	521914	501017	7278336	RF	08-Mar-07	RF	24. Mar. 2007		16
	521967	501281	7278238	RF	08-Mar-07	RF	24. Mar. 2007		16
	521972	497033	7279409	RF	08-Mar-07	RF	24. Mar. 2007		16
	521973	497547	7279266	RF	08-Mar-07	RF	24. Mar. 2007		16
	521311	492551	7242726	RF	11-Mar-07	RF	26. Mar. 2007		15
	521425	494800	7243722	RF	11-Mar-07	RF	26. Mar. 2007		15
	521441	494078	7243407	RF	11-Mar-07	RF	26. Mar. 2007		15
	521493	495017	7243814	RF	11-Mar-07	RF	26. Mar. 2007		15
	521514	493024	7242939	RF	11-Mar-07	RF	26. Mar. 2007		15
	521571	493838	7243307	RF	11-Mar-07	RF	26. Mar. 2007		15
	521588	494311	7243506	RF	11-Mar-07	RF	26. Mar. 2007		15
	521654	493362	7243097	RF	11-Mar-07	RF	26. Mar. 2007		15
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	521788	492311	7242615	RF	11-Mar-07	RF	26. Mar. 2007		15
	521812	494551	7243613	RF	11-Mar-07	RF	26. Mar. 2007		15
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	521259	375250	7429743	RF	15-Mar-07	RF	29. Mar. 2007		14
	521299	376299	7430396	RF	15-Mar-07	RF	29. Mar. 2007		14
	521346	376501	7430530	RF	15-Mar-07	RF	29. Mar. 2007		14
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	521385	372009	7427690	RF	14-Mar-07	RF	29. Mar. 2007		15
	521438	375034	7429595	RF	15-Mar-07	RF	29. Mar. 2007		14
	521533	371548	7427402	RF	14-Mar-07	RF	29. Mar. 2007		15
	521546	372893	7428245	RF	14-Mar-07	RF	29. Mar. 2007		15
	521548	376710	7430659	RF	15-Mar-07	RF	29. Mar. 2007		14
	521617	372445	7427965	RF	14-Mar-07	RF	29. Mar. 2007		15
	521634	373326	7428526	RF	14-Mar-07	RF	29. Mar. 2007		15
	521763	373780	7428812	RF	14-Mar-07	RF	29. Mar. 2007		15
	521768	374817	7429466	RF	15-Mar-07	RF	29. Mar. 2007		14
	521789	376111	7430280	RF	15-Mar-07	RF	29. Mar. 2007		14
	521806	374612	7429329	RF	14-Mar-07	RF	29. Mar. 2007		15
	521945	375901	7430150	RF	15-Mar-07	RF	29. Mar. 2007		14
	521953	374204	7429076	RF	14-Mar-07	RF	29. Mar. 2007		15
	521976	375689	7430012	RF	15-Mar-07	RF	29. Mar. 2007		14
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	521293	628260	7436359	RF	14-Mar-07	RF	29. Mar. 2007	m.	15
	521344	628359	7436262	RF	14-Mar-07	RF	29. Mar. 2007	m.	15
	521483	628330	7436277	RF	14-Mar-07	RF	29. Mar. 2007	m.	15
	521523	628386	7436268	RF	14-Mar-07	RF	29. Mar. 2007	m.	15
	521605	628451	7436332	RF	14-Mar-07	RF	29. Mar. 2007	m.	15
	521615	628418	7436281	RF	14-Mar-07	RF	29. Mar. 2007	m.	15
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	521740	628439	7436318	RF	14-Mar-07	RF	29. Mar. 2007	m.	15
	521867	628316	7436290	RF	14-Mar-07	RF	29. Mar. 2007	m.	15

Talisman Great Bear Plains Survey
Field Information

Sent Modules	Module #	Easting	Northing	Initials	Date Ent.	Initials	Date Rec.	Notes	EXP
	521890	628289	7436323	RF	14-Mar-07	RF	29. Mar. 2007	m.	15
	521922	628267	7436340	RF	14-Mar-07	RF	29. Mar. 2007	m.	15
	521987	628290	7436386	RF	14-Mar-07	RF	29. Mar. 2007	m.	15
	521280	373130	7428306	RF	13-Mar-07	RF	29. Mar. 2007	m.	16
	521457	373208	7428366	RF	13-Mar-07	RF	29. Mar. 2007	m.	16
	521568	373008	7428410	RF	13-Mar-07	RF	29. Mar. 2007	m.	16
	521570	373189	7428345	RF	13-Mar-07	RF	29. Mar. 2007	m.	16
	521686	373186	7428398	RF	13-Mar-07	RF	29. Mar. 2007	m.	16
	521720	373086	7428282	RF	13-Mar-07	RF	29. Mar. 2007	m.	16
	521750	373009	7428422	RF	13-Mar-07	RF	29. Mar. 2007	m.	16
	521783	373025	7428373	RF	13-Mar-07	RF	29. Mar. 2007	m.	16
	521822	373171	7428335	RF	13-Mar-07	RF	29. Mar. 2007	m.	16
	521850	373202	7428351	RF	13-Mar-07	RF	29. Mar. 2007	m.	16
	521857	373032	7428359	RF	13-Mar-07	RF	29. Mar. 2007	m.	16
	521910	373072	7428299	RF	13-Mar-07	RF	29. Mar. 2007	m.	16
	521921	373195	7428387	RF	13-Mar-07	RF	29. Mar. 2007	m.	16
	521988	373148	7428318	RF	13-Mar-07	RF	29. Mar. 2007	m.	16
	522010	373108	7428294	RF	13-Mar-07	RF	29. Mar. 2007	m.	16

PROJECT INFORMATION FORM

Date **Nov 14, 2006** Completed by **Timo Von Rudloff**

1. Company Information

Name **Talisman Energy Inc.**

Address **Suite 3400**

888 – 3rd Street SW

Calgary, AB T2P 5C5

Your Name **Timo Von Rudloff**

Title **Senior Geophysicist - Exploration, Global New Ventures**

Telephone **403 237 1261** Fax

Email **TVonRudloff@talisman-energy.com**

Preferred Method of Communication **email**

Best Time to Contact You **weekdays**

Your Previous Geochemical Experience **non-participant, overview**

2. Where to send this information:

W. L. Gore & Associates, Inc.
GORE-SORBER® Exploration Survey
100 Chesapeake Blvd.
P. O. Box 10
Elkton, MD 21922-0010 USA

Phone: 410-506-4777
Fax: 410-506-4780

3. For questions or comments:

Paul Harrington, phone 410-506-4773, email pharring@wlgore.com
Alan Silliman, phone 410-506-4772, email asillima@wlgore.com
Mark Wrigley, phone 410-506-4771, email mwrigley@wlgore.com
Ray Fenstermacher, phone 410-506-4775, email rfenster@wlgore.com

4. Geochemical Survey Objective

Primary

Determine the probability of significant hydrocarbon accumulations structurally trapped in the Cambrian Mount Clark formation on Exploration License 437 in the Great Bear Plains area of the Northwest Territories of Canada based on modeled accumulations in the Colville Hills area.

Secondary

5. Survey Design

We encourage a cooperative approach to designing the most effective geochemical survey to meet the stated survey objectives. The following information will assist this process.

Survey application

- ☐ Development (define producing field limits, find bypass pay zones)
 - ☒ Frontier (screen large unexplored areas)
 - ☒ Exploration (focus seismic, prioritize leads, stratigraphic play areas)
 - ☐ Offshore (analysis and modeling of core samples)
 - ☐ Other:
-

Survey configuration

- ☐ Regular grid pattern
 - ☐ Irregular grid pattern
 - ☐ Determined by site access
 - ☒ Line transect
 - ☐ Random
 - ☐ Other:
-

Sample Spacing	500 meters	Estimated Number of Samples	447 (Grid)
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Approximate Extent of Coverage (area km ² , line km)	222 line km
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6. Project Timing

Please indicate any time limits that apply to this survey. If necessary, projects may be expedited upon request (a fee may apply).

Field Mobilization	January 15, 2007	Complete Field Operations	February 20, 2007
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Preliminary Data	April 1, 2007	Submit Report	May 15, 2007
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7. Survey Area Information

Location	Great Bear Plains, West of Great Bear Lake
Topography/Relief	Low relief hills and ridges populated with numerous lakes and one deep valley river (Whitefish River)
Road/Trail Access	Limited, Along Seismic Lines, Winter Access Only
Seismic Lines/Age	Mid 70's to Present
Climate/Season during Field Operations	Winter (Jan – Mar), Northern Canada
Survey Area Vegetation	Scrub Spruce with many lakes
Survey Area Soil Type	Consolidate Cretaceous Bedrock
(soil consolidation, sand or gravel content, factors affecting sample acquisition)	
Is Area Permitted?	Part of seismic program Client Provide Logistics Support? YES
Nearest Towns with Facilities	DELINE SEISMIC OPERATIONS (Camp)

8. Mapping

Please specify what geographical coordinate system is preferred for mapped results.

Projection	Ellipsoid
Geodetic Datum Parameters	NAD83

9. Geologic Overview

Geologic Basin	Great Bear Basin(Depo-center)
Petroleum System	Reservoir – Cambrian Mount Clark (Sst)
(reservoir formation – source rock)	Source Rock – Cambrian Mount Cap (Shale)
Faulting	Extensive reactivation of Proterozoic faults
(prominent surface expressions, subsurface faulting, type of fault, throw, etc.)	
Potential Trap Description	Major ridge complexes; reactivated Proterozoic fault
(structural, stratigraphic, potential size and shape)	
Structures & four-way closures	
Geologic Data Available?	Gravity, HRAM & recent seismic (2D); modeling of pools in the
(well logs, seismic cross-sections, structural interpretations, previous geochemical data, etc.)	
Colville Hills area (Tweed & Nogha)	

10. Reservoir Information

Physical measurements of the reservoir section and petroleum fluids encountered.

Formation (name and rock type)	Age	Depth (production)	Pressure (normal?)	Petroleum (type)	Porosity/Perm
Mt Clark	Cambrian	1200 - 1500m		Gas & Condensate	10-15%/500md

11. Well Site Information

This information used to define geochemical model sites for soil gas sampling. Please include dry holes and basement tests, along with nearby or regional production sites.

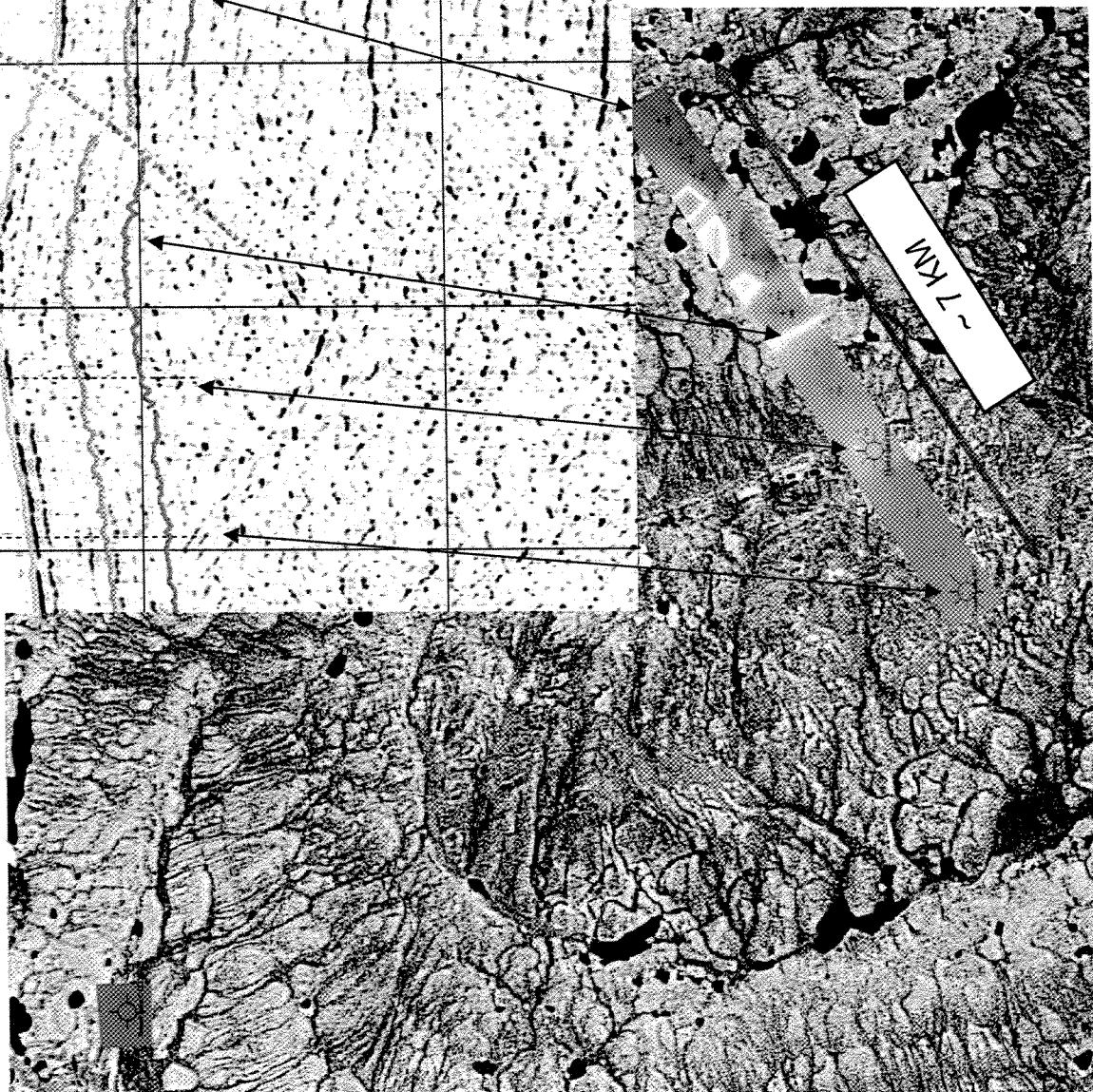
Well Name	Date (completion)	Oil (°API)	GOR	%Water	Production (bopd)	Produced (cumulative)
Losh Lake G-22	1975	Proterozoic Test		P & A		

Are secondary recovery techniques currently in use in the survey area, or with any of the above production wells? (Injection, gas lifting, workovers, frac or acidizing)

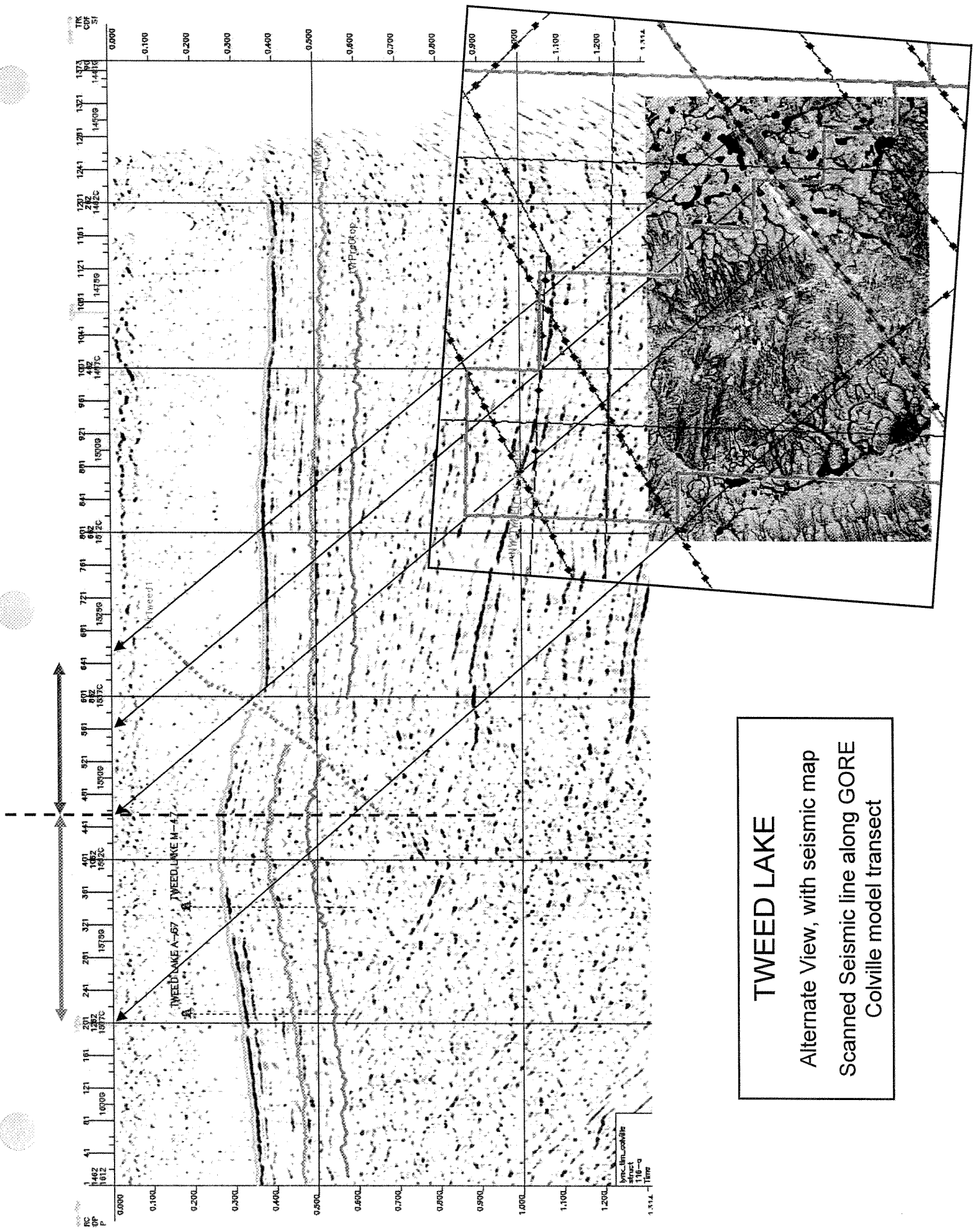
Well Name	Description

Are any of these wells directionally drilled or horizontally drilled?

Well Name	Description



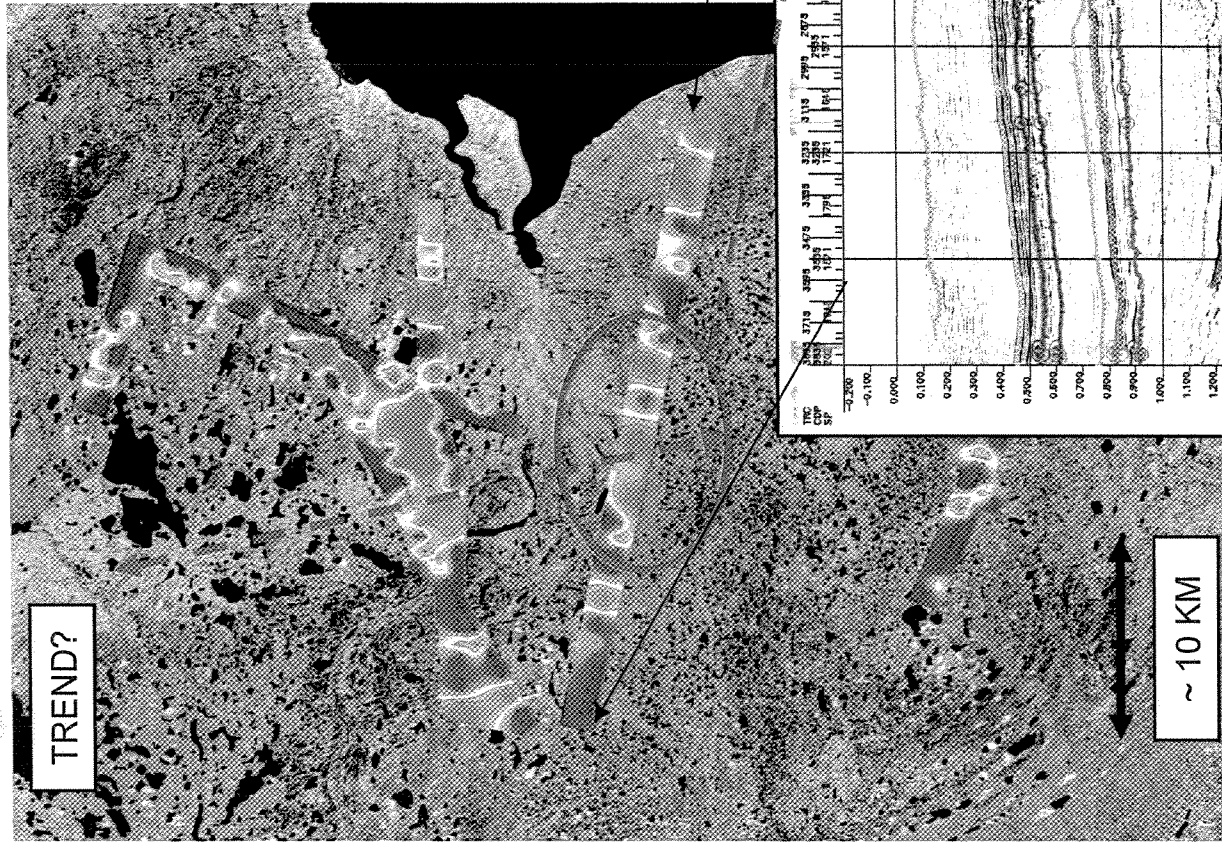
Scanned Seismic line along
GORE Colville model transect



TWEED LAKE

Alternate View, with seismic map
 Scanned Seismic line along GORE
 Colville model transect

TREND?

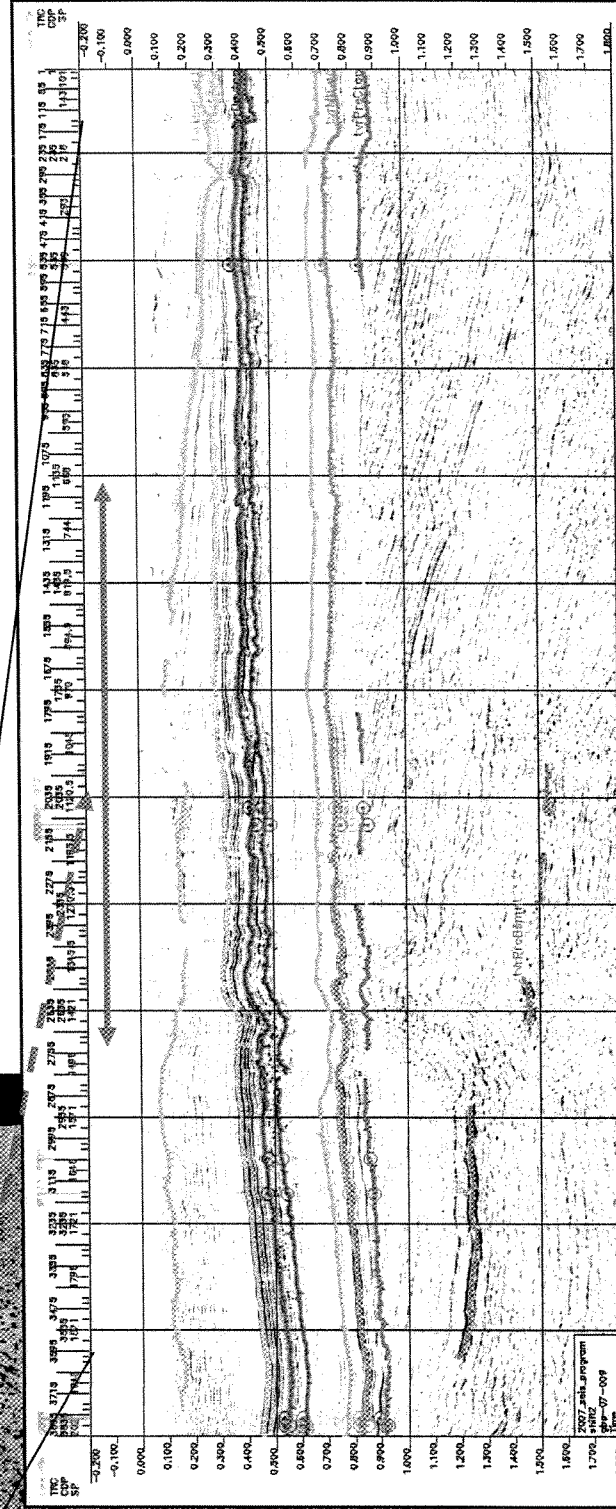


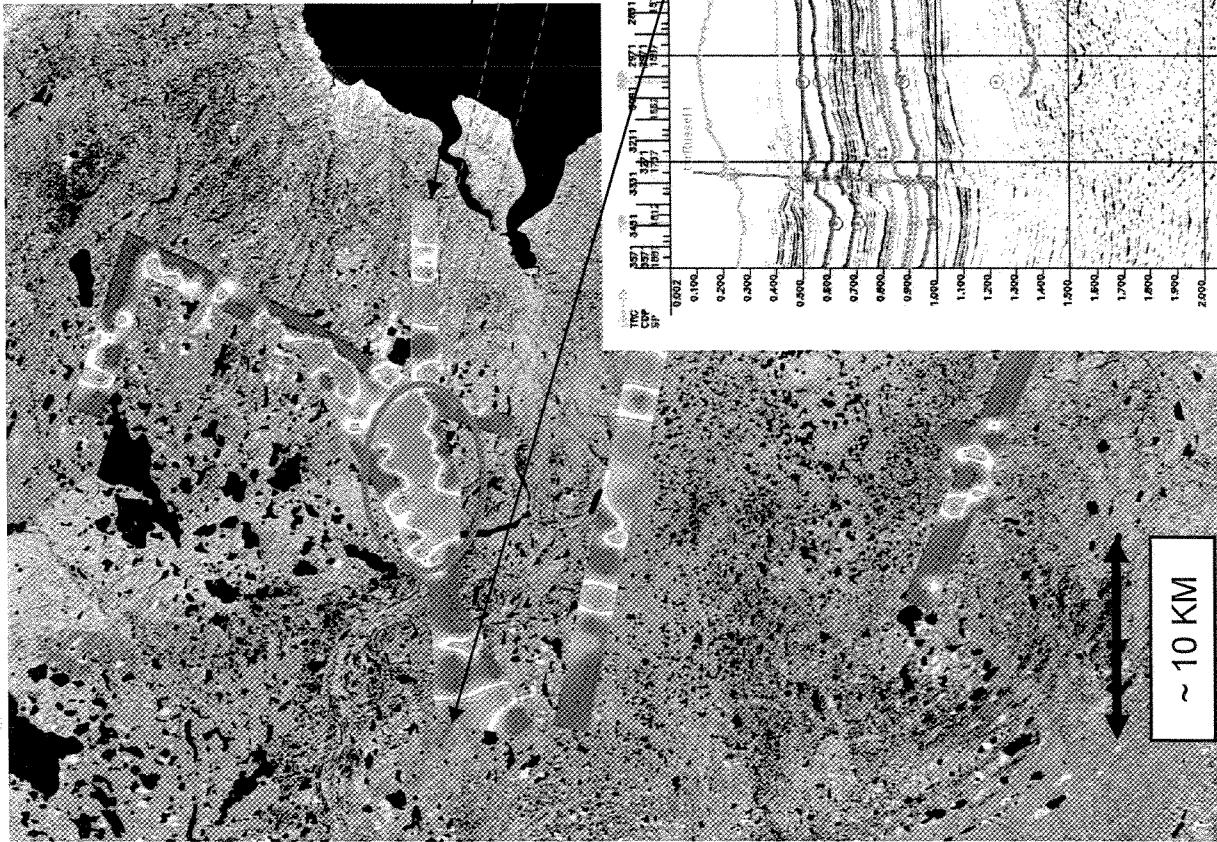
~ 10 KM

2007 LINE 009

GORE HC Signatures appear to match local E-W
Closures on Seismic lines

Positions are approximate, pending detailed data posting

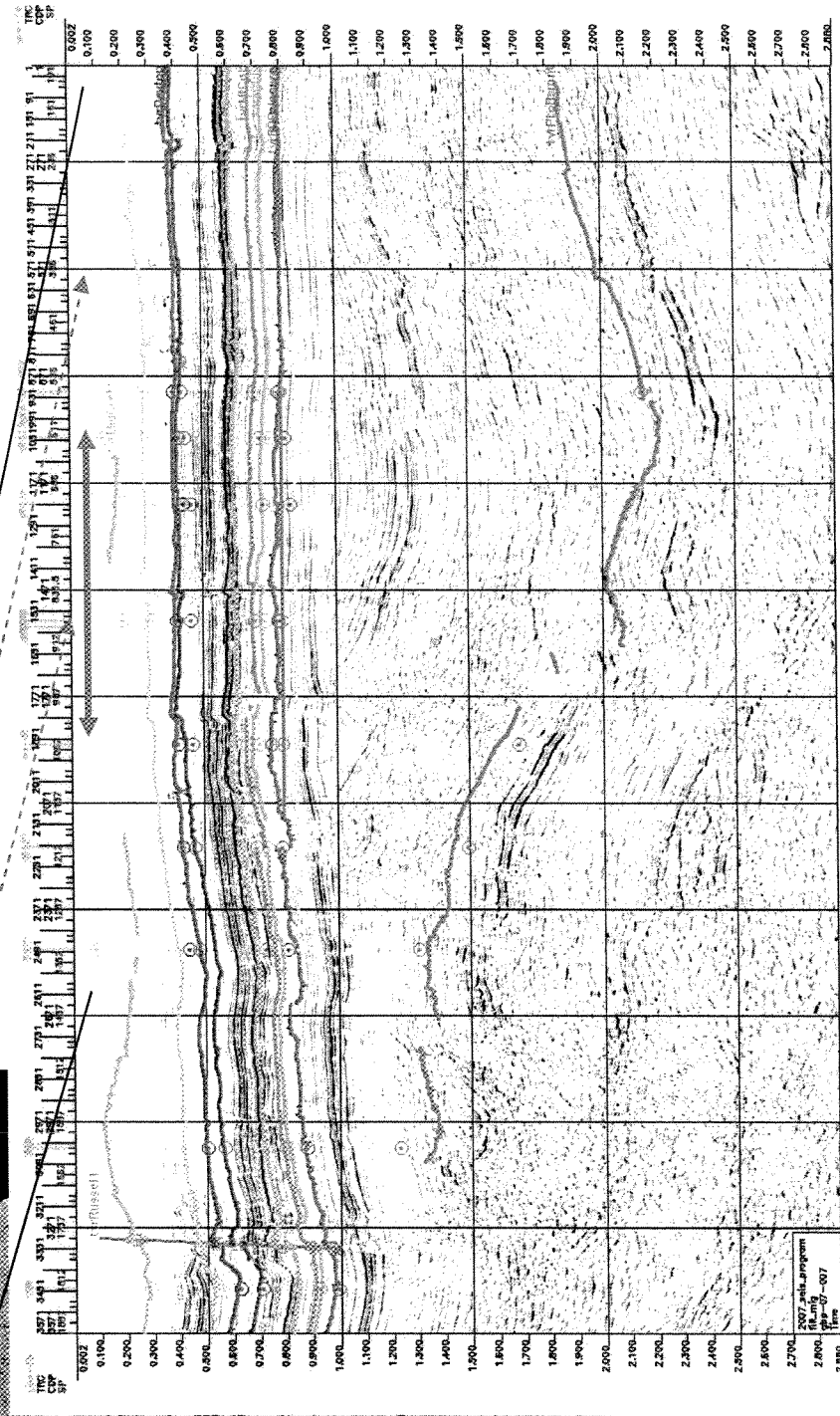


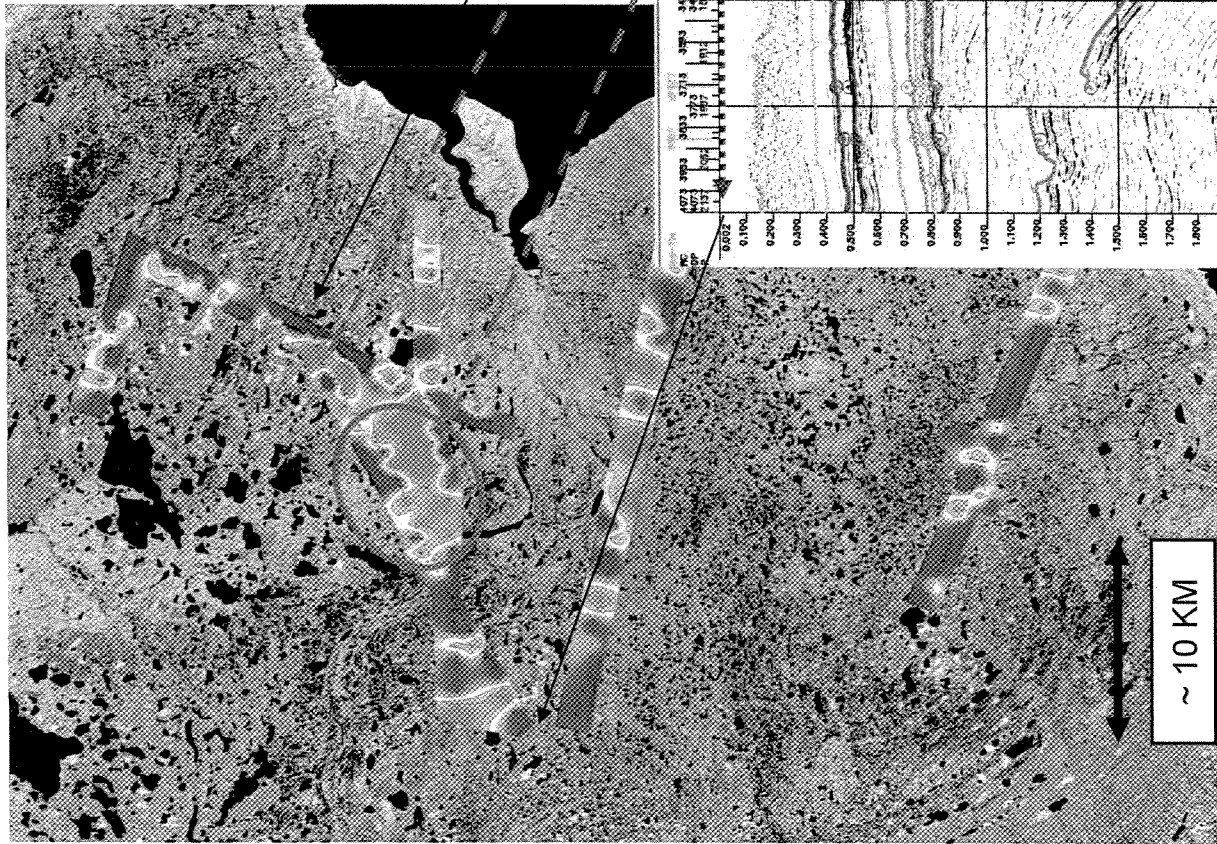


~ 10 KM

2007 LINE 007

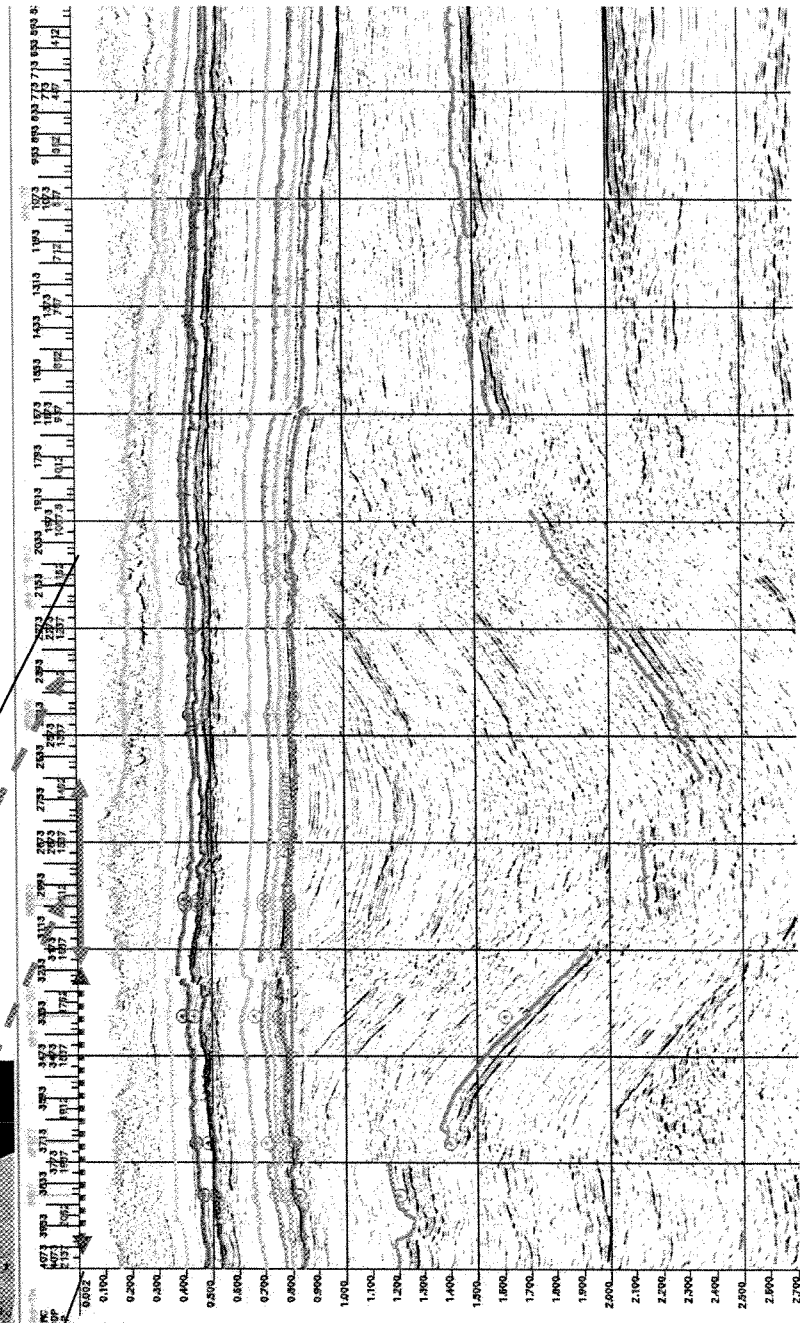
GORE HC Signatures appear to match local E-W
Closures on Seismic lines
Positions are approximate, pending detailed data posting



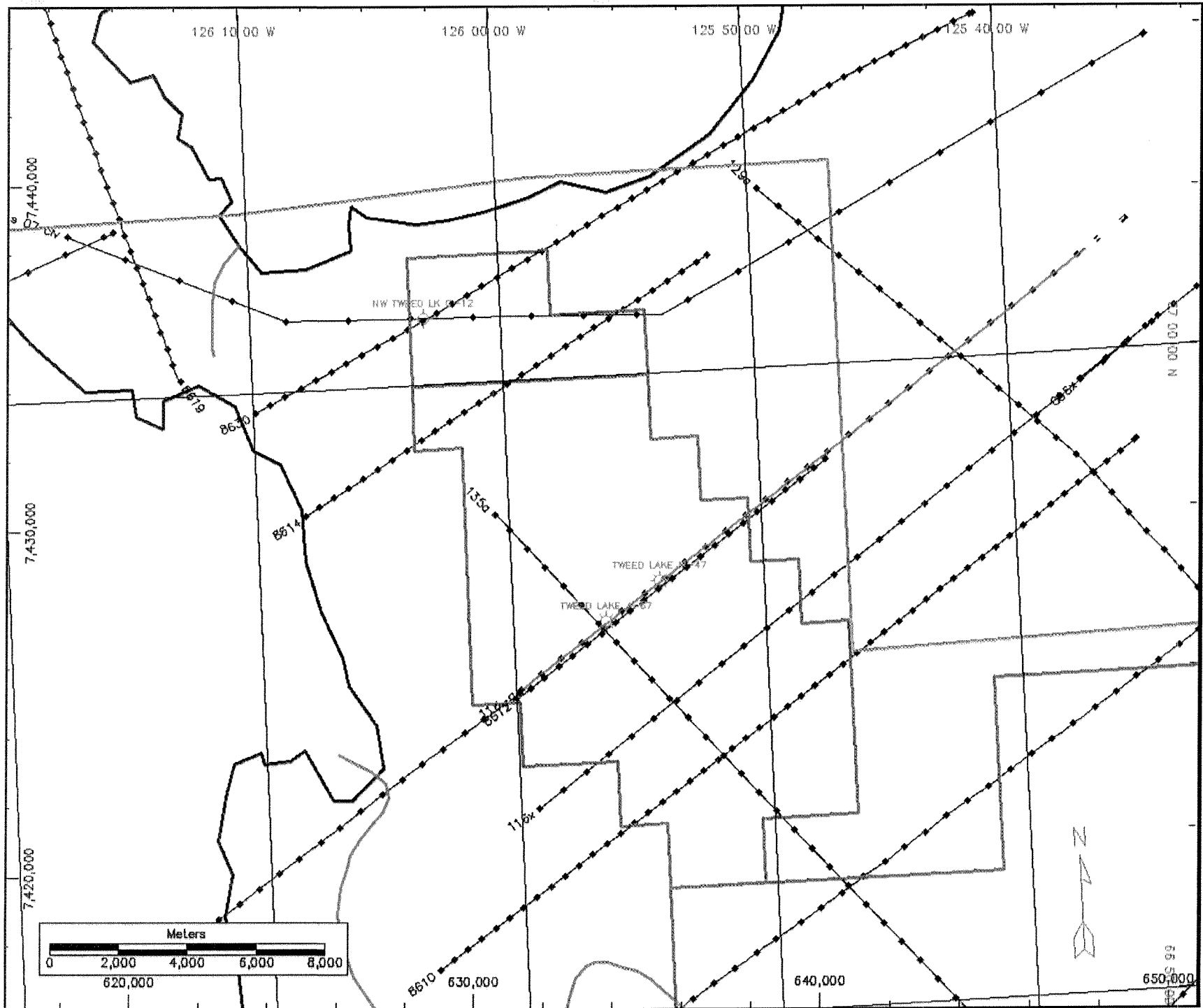


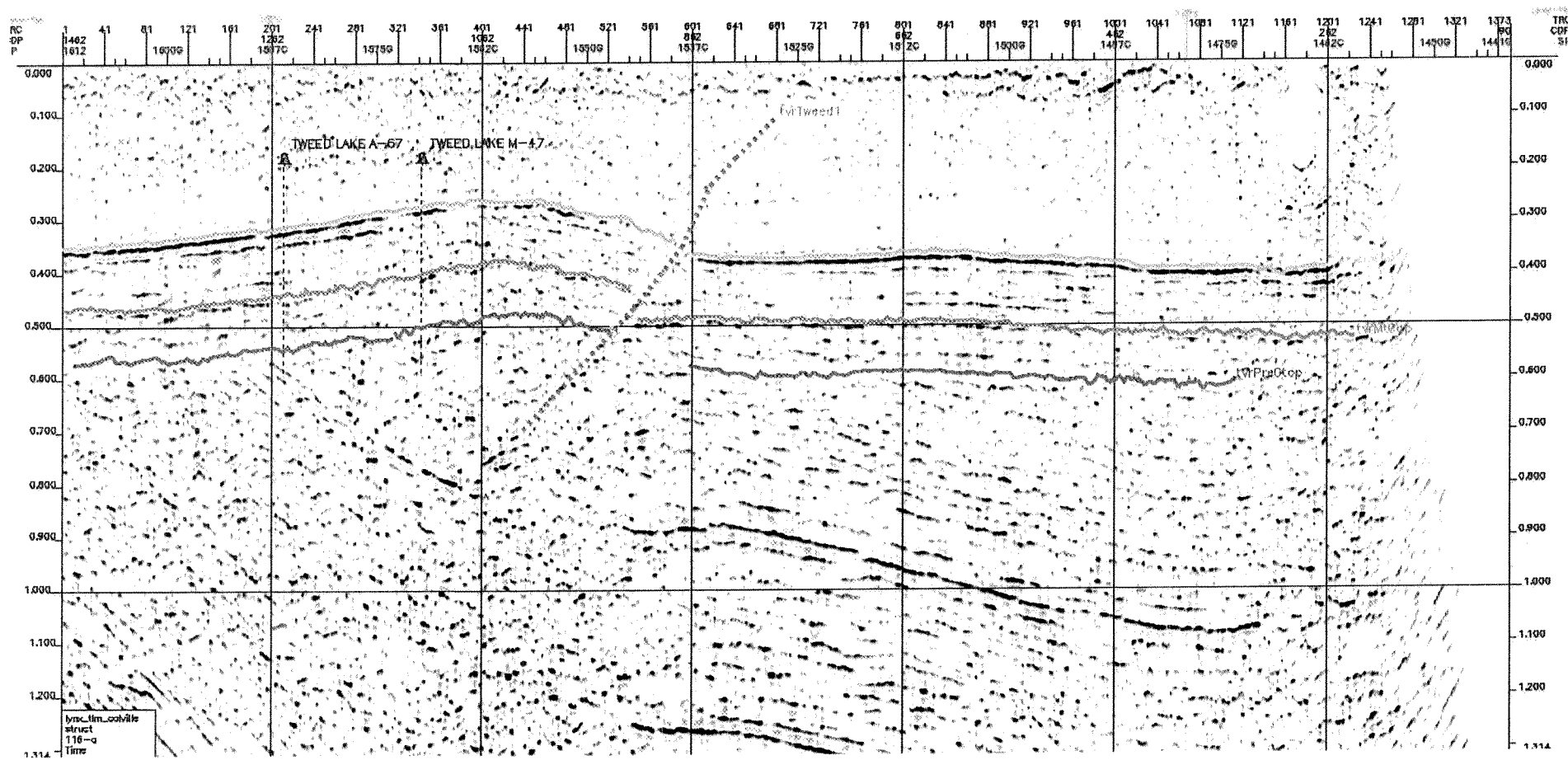
GORE HC Signatures appear to match local E-W
Closures on Seismic lines

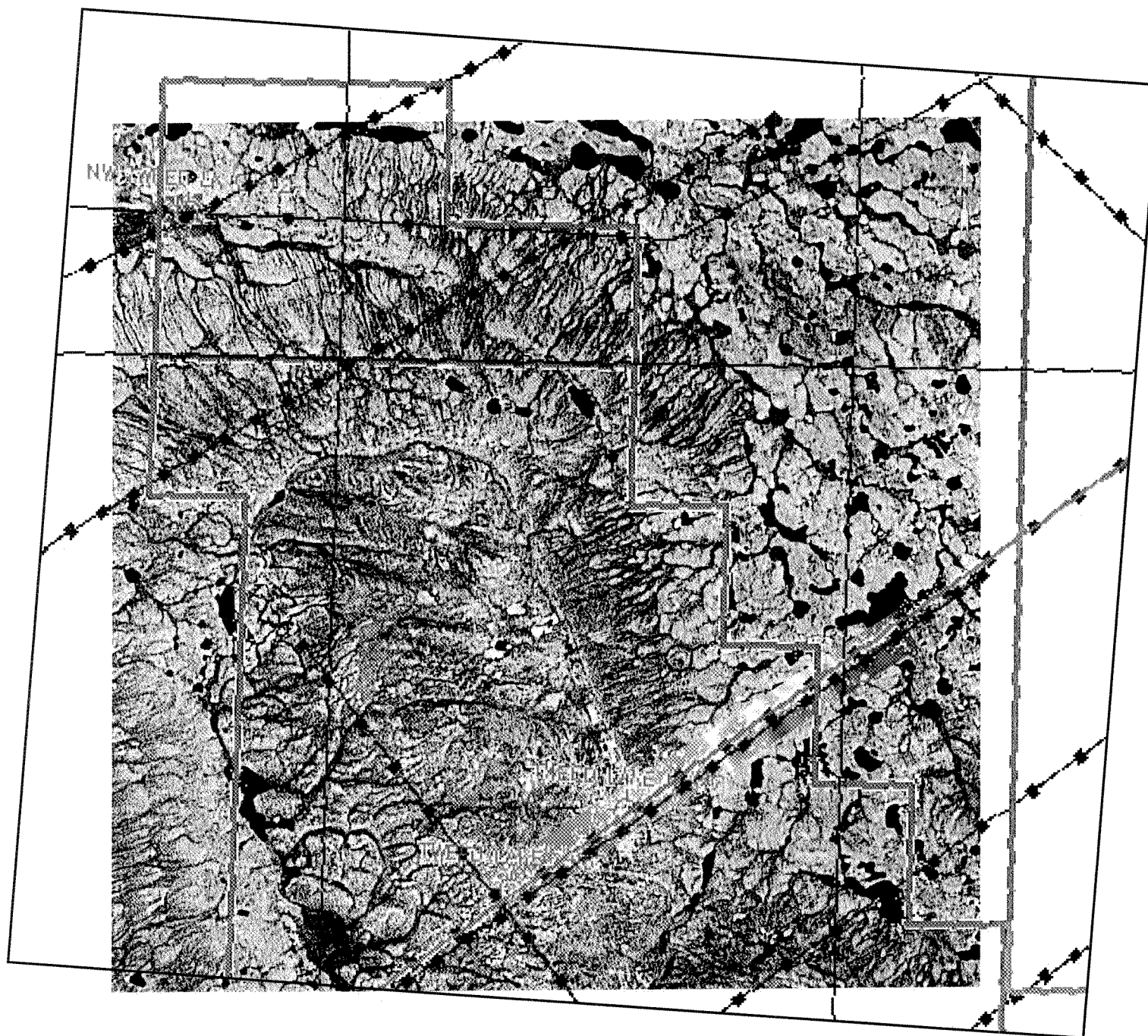
Positions are approximate, pending detailed data posting



2007 LINE KA-06

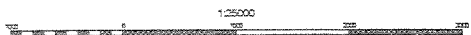
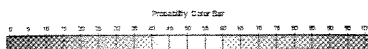




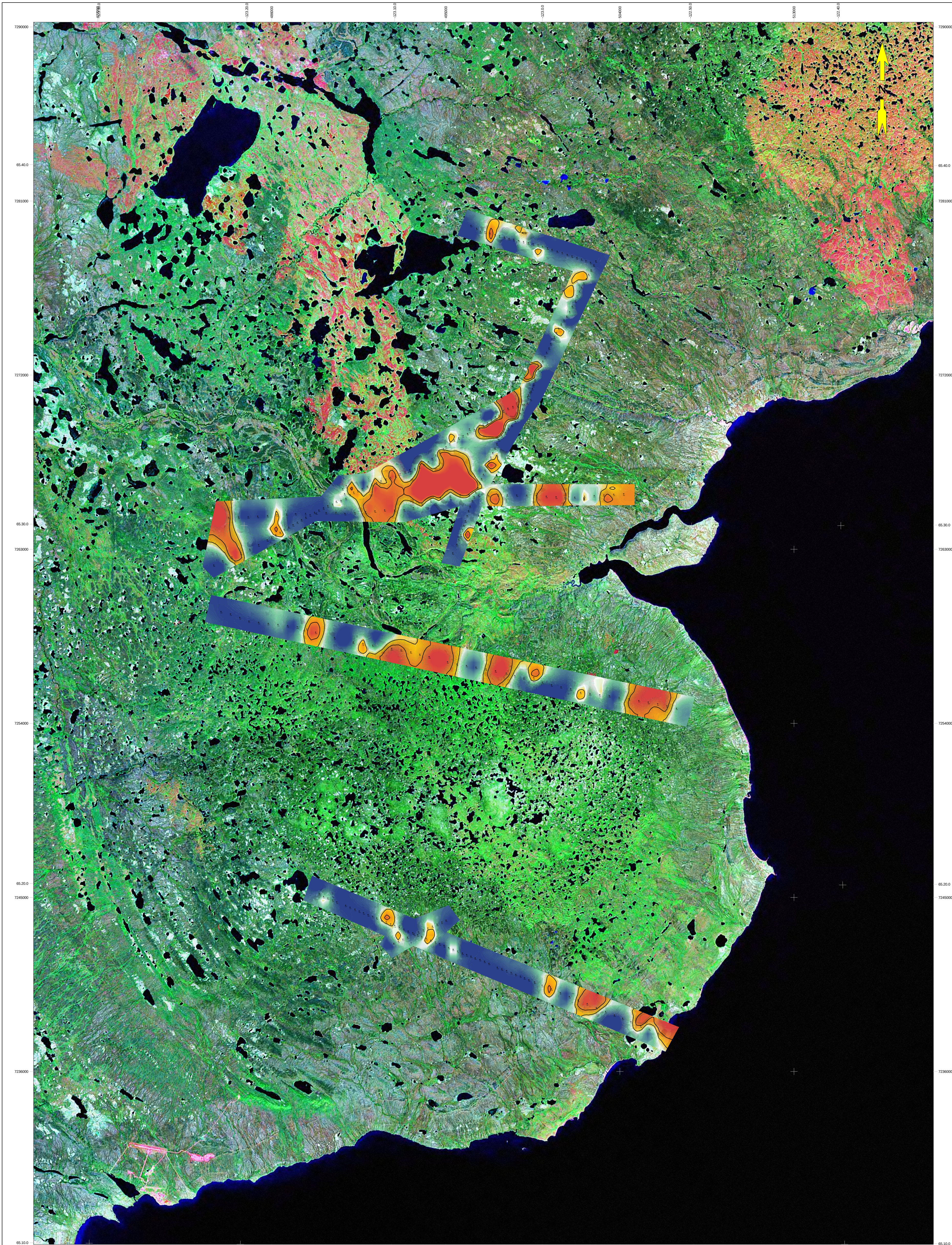




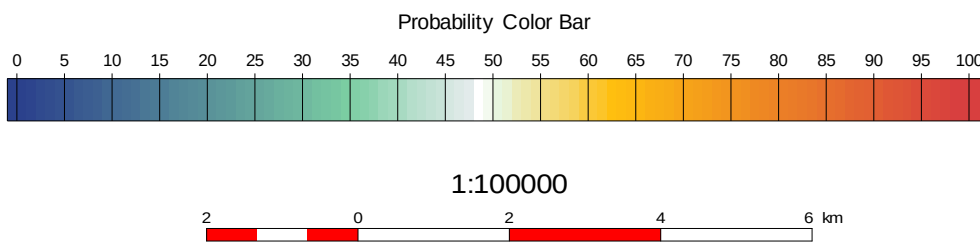
Grid Sample
+ Sample Location



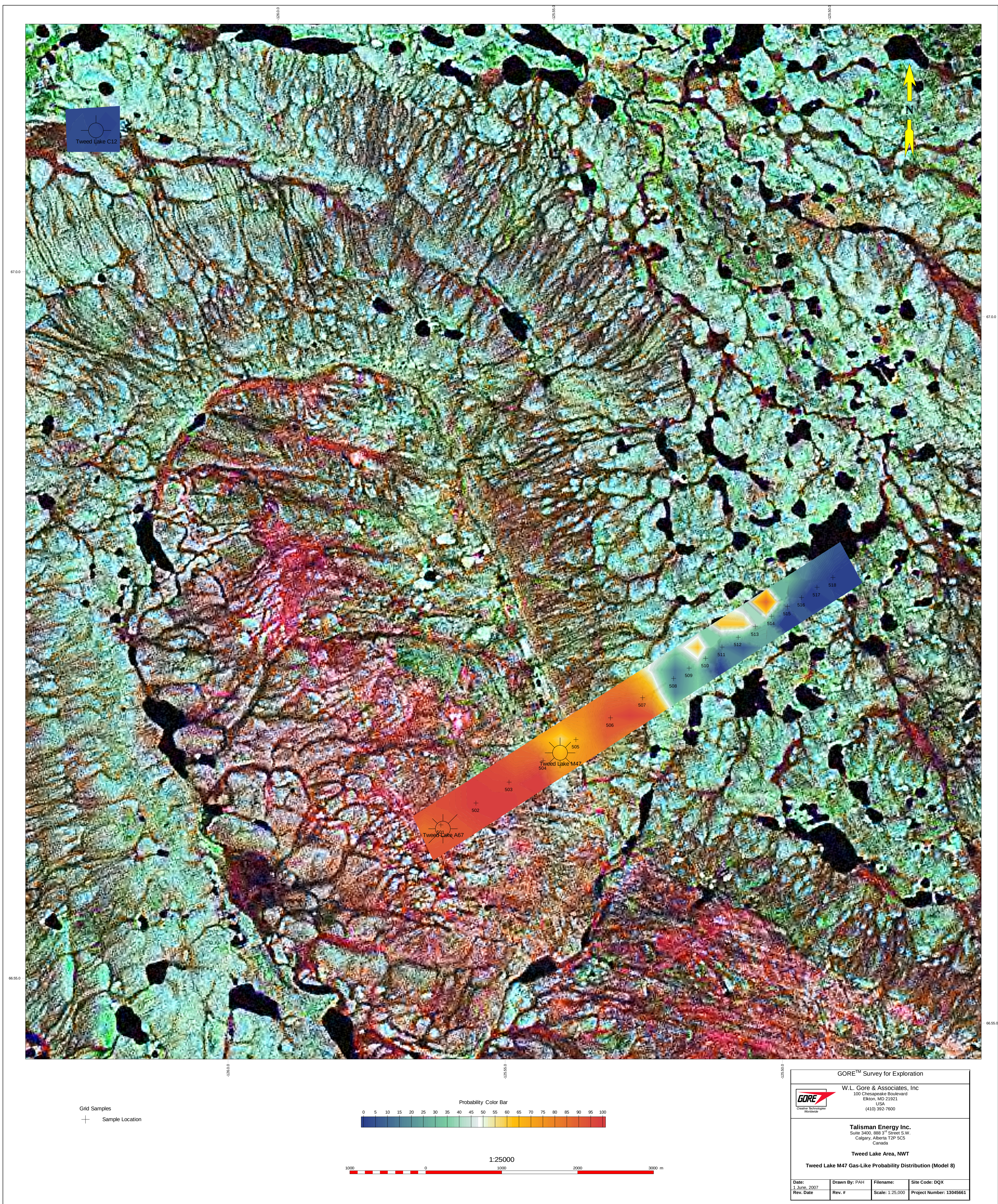
GORE™ Survey for Exploration			
			
W.L. Gore & Associates, Inc. 660 Chesapeake Boulevard Dover, MD 21901 USA (410) 353-7600			
Talsman Energy Inc. One Sunnyside Drive Calgary, Alberta T2P 5C2 Canada			
Three Lake Area, NWT			
Three Lake M67 Gas-Line Probability Distribution (Model B)			
Date: 12/11/2003	Drawn By (if any): Rev. 4	Filled By: Rev. 4	Shaded By (if any): Rev. 4
Scale: 1:25,000 Project Number: 1300000			



Grid Samples
+ Sample Location



GORE™ Survey for Exploration			
GORE Geological Research & Exploration W.L. Gore & Associates, Inc 100 Chesapeake Boulevard Elkton, MD 21921 USA (410) 392-7600			
Talisman Energy Inc. Suite 3400, 888 3rd Street S.W. Calgary, Alberta T2P 5C5 Canada			
Great Bear Plains Survey, NWT			
Tweed Lake M47 Gas-Like Probability Distribution (Model 8)			
Date: 1 June 2007	Drawn By: PAH	Filename:	Site Code: DGX
Rev. Date	Rev. #	Scale: 1:100,000	Project Number: 13045661



IMPORTANT NOTE:
Explanation and Disclaimer for Mass Data

PLEASE NOTE:

This file includes GORE™ Survey mass quantified data for all organic compounds analyzed for your geochemical survey.

The sheet labeled "Mass Data" contains quantified values in mass units for each field sample and quality assurance sample of this geochemical survey. These values are shown in units of nanograms (10^{-9} gm). These data are not adjusted for the significant digits of the measurement.

These data undergo an extensive quality evaluation to establish the fitness-for-use of these results. This evaluation includes both chemical and statistical criteria, in preparation for the geochemical modeling process. The sheet labeled "Low S2N Compounds" contains a list of compounds which were determined to be of low signal-to-noise content during the GORE fitness-for-use evaluation.

These data are intended for and only validated for use with the GORE™ Survey geochemical modeling process. Any other use, including comparison of results to whole petroleum fluids or to other geochemical data is solely at **user's own risk**. W. L. Gore & Associates make no warranties that the data is fit for other such uses.

Compound identification and quantification is based on the presence of specific target compound ions within well-defined chromatographic retention time ranges, as determined by the analysis of reference compound standards. Mass values are calculated using a time-weighted response factor determined from the analysis of the reference standards. Compound mass is equal to the compound-specific time-weighted response factor multiplied by the response for the compound obtained from the analytical instrument.

For example, for a reference standard of known mass, a response of **X** is obtained at time **A** and a response of **Y** is obtained at time **Z**. The difference between **X** and **Y**, divided by the difference between **A** and **Z**, yields a time-weighted correction factor. This correction factor is then used to determine the properly weighted response for a sample analyzed at any given time between **A** and **Z**.

Approximately twelve (12) field samples and quality assurance blank samples are analyzed between reference compound standards. Analytical results obtained from all field samples and quality assurance samples are included in the final mass data tables. The analytical sequence order is also included with this data.