



THE ASSOCIATION OF EXPLORATION GEOCHEMISTS NEWSLETTER

P.O. Box 523 (Metropolitan Toronto)
Rexdale, Ontario, M9W 5L4

No. 57

October 1986

President's Message - Glenn Allcott

I have been thinking about the future health of our Association. I find myself with more questions than answers in this regard. We certainly need to be considering actions now which will ensure continued growth of membership -- membership with the same dedication to the Association as in the past. What strategic planning do you believe we should be carrying out to ensure that there will be professional earth-scientists ready to take leadership roles in exploration geochemistry for the year 2000? Have you asked yourself lately why you joined the Association? Are those reasons still valid in attracting new membership?

We currently support our science by sponsoring symposia, publishing a professional journal, providing a distinguished lecturer, recognizing student accomplishment through a student prize, and providing essential information to the members through our newsletter. These substantial accomplishments are achieved through voluntary effort of dedicated members. If these activities are to be part of the future, we need to be sure that the Association's professional and membership benefits are attractive enough to maintain current membership and develop new membership. How are we doing?

In the July newsletter I encouraged you, the members, to take a more active role by offering suggestions for improvements to the Association. The response, so far, has included ideas on establishment of an employment register, development of additional informational areas that might be covered in the newsletter, and ways of simplifying admissions procedures. Thanks to those members for their thoughtful suggestions. We will be discussing the ideas at future Council meetings.

Comments are encouraged!

Personal Column

Information on Association members is received from around the world. To keep your fellow members informed of your latest moves, send a brief summary to the Rexdale office and please indicate that this information is intended for the Newsletter.

Dr. C.S. Rugless has accepted a long-term contract as project geologist for Homestake Australia Limited responsible for establishing the company's exploration base in Kalgoorlie in the Eastern Goldfield of

Western Australia. He may be contacted through Homestake Australia Ltd., P.O. Box 972, Kalgoorlie, WA 6432, Australia.

Dr. A. Armour-Brown has left the Geological Survey of Greenland (Copenhagen, Denmark) at the termination of his contract and has moved to Cambridge, England. He is now seeking short-term contract and consulting work and may be contacted at One Lyndewade Road, Cambridge CB2 1HL, England.

Lynda Bloom has left X-Ray Assay Laboratories and has joined the Ontario Geological Survey as Staff geochemist.

Peter Bradshaw has returned to Canada from his assignment as Regional Exploration Manager, Placer Exploration Ltd., Australia. He has been appointed Overseas Exploration Manager, Placer Development Ltd., Vancouver, Canada.

New Members

Names of the following candidates have been recommended by the Admissions Committee and have been approved by Council. According to the Association's by-laws, the names of

candidates are to be published for consideration by the membership. If you wish to comment on any of the candidates, please do so in writing to the secretary within 60 days.

Voting Members

S. Arrykul

Lecturer, Mining
Engineering Dept.,
P.O. Box 2, Khohong,
Hatyoi
90112, Thailand

F.M. El Salem

Geochemical Section Head,
Natural Resources Authority,
P.O. Box 7, Amman, Jordan

K.M. Green

Prospector,
Apt. S-202,
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Costa Mesa, California
92626

R.P. Foster

Lecturer in Economic
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Dept. of Geology,
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Southampton, U.K.
SO9 5NH

E.G. Lockhart

Senior Geologist,
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U.S.A.

A.R. Reid

Exploration Geochemist,
Huntly Group Ltd.,
13801 W. 54 Ave.,
Arvada, Colorado 80002
U.S.A.

J.I. Stewart

Technical Manager,
Boorara Mining Ltd.,
6 Alderdice Place,
Kalgoorlie,
Western Australia, 6430

B. Overbay

Geologist, Placer U.S.,
P.O. Box 2354, Hawthorne,
Nevada 89415, U.S.A.

Student Members

Affiliate Members

J.E. Campbell

Research Scientist,
Saskatchewan Research
Council,
15 Innovation Blvd.
Saskatoon, Sask. Can.
S7N 2X8

G. Chater

Texas Christian University,
P.O. Box 31064,
Fort Worth,
Texas 76129, U.S.A.

A.P. O'Kelly

Rudolf Str. 51, D-5100
Aachen F.R.G

S. Estrada

Exploration Manager,
Hysla, S.A. DE C.V.,
P.O. Box 1579,
Monterrey, N.L. Mexico

H. Zhihui

Institute of Geophysical and
Geochemical Exploration,
Langfang, Hebei, China

Secretary's Notes

Judging from the comments I have received, the new printed-style Newsletter has met with general approval. However, I would still welcome your suggestions for improvements to the existing format and ideas for new topics which may be of interest to members. In this edition of the Newsletter, I would like to draw your attention to a notice of the 1986 Student Prize Competition, an announcement of the 1986-87 Distinguished Lecturer Presentations to

be given by Dr. Graham Closs and an invitation for members to nominate a candidate for the 1987-88 Distinguished Lecturer Series. A nomination form is enclosed with the Newsletter and should be returned to Norman Lavery by December 1, 1986. Before leaving the topic of nominations, I have only received one response to a request for Ordinary Councillor nominations distributed with the last Newsletter. There is still time for those members who would like

to seek nomination as an Ordinary Councillor for the 1987-88 term to complete the Nomination form (enclosed with Newsletter #56) and to return it by November 1st, 1986.

Finally, the 1987 Annual Dues notice is enclosed with this Newsletter and I would request that you return it, with your dues payment, by January 1st, 1987.

Ray Lett

Distinguished Lecture Series

The Committee is pleased to announce that Dr. Graham Closs will visit the following schools in the Fall of 1986.

New Mexico Institute of Mining and Technology

Socorro, New Mexico

University of California

Los Angeles, California

University of Utah

Salt Lake City, Utah

Dr. Closs will present talks on the following topics: "Orientation surveys: A Means of Optimizing Geochemical Survey Effectiveness in Mineral Exploration"; "Models in Exploration Geochemistry"; "Data Analysis in Exploration Geochemistry"; and "Data Analysis in Exploration Geochemistry".

Each host organization will be responsible for inviting nearby schools

and professional organizations to the lectures and seminars presented by Dr. Closs.

Norman G. Lavery
Committee Chairman

Third Annual Student Paper Competition

The Association of Exploration Geochemists will hold its third annual Student Paper Competition in 1986. Papers eligible for the competition must have been published in a refereed scientific journal within the last five years and less than five years since the graduation of the student author. Multiple authors are allowed, although the student must be the senior author. Deadline for receipt of nominations is December 1, 1986. The award will be announced in January, 1987 and the

prize will consist of a two-year membership at the appropriate level in the Association of Exploration Geochemists and receipt of all publications. Please send nominations, including three copies of the paper and the current address of the nominee to: S.E. Kesler, Department of Geological Sciences, University of Michigan, Ann Arbor, MI 48109-1063.

Ian Graham - Winner of 1986 Exploration Geochemistry Scholarship

Ian Graham of the University of Regina, Saskatchewan has been awarded the Association of Exploration Geochemists 1986 Exploration Geochemistry Scholarship. The award will support graduate research into the petrology, geochemistry and mineralization of selected basic-ultrabasic intrusions in the La Ronge domaine, northern Saskatchewan.

Computer Software Pool

Computer programs that are currently available through the AEG are listed below. This list is updated and replaces the list that occurred in Newsletter #56 which had several errors in it (our apologies.) In the future, the program lists will be provided once a year and any new additions will be listed as they are made available.

The programs that were originally supplied as hardcopy paper format (Newsletter #50) have been discontinued in favour of programs that have been written for the IBM-PC (DOS) microcomputers. Below is a description of the routines that are currently available from the Ontario Geological Survey through the Association of Exploration Geochemists. These routines have recently been adapted for the IBM-PC microcomputers and are available on one 5.25" double sided double density (DSDD 360 Kb) diskette. The cost for the disk plus postage is \$15.00 Cdn. (\$12.00 U.S.). The cost can be reduced to \$5.00 Cdn. (\$4.00 U.S.) if you send us your disk.

Only the source code is provided. Any routines required for plotting must be supplied by the user. The plotting routines used in the programs are the Industry Standard Plotting Package (ISPP) routines as such as those used by Calcomp. These programs have been developed using the IBM Professional Fortran compiler Version 1.18 and make use of Fortran 77 features.

The programs that are available are:

1: BOUNDARY.FOR: a program which calculates the following:

a: $\text{Na}_2\text{O} + \text{K}_2\text{O} - \text{FeO}$ (Total) - MgO values for the AFM ternary diagram.

b: A1 - Fe+Ti - Mg cation values for the Hensen classification scheme.

c: $\text{Al}_2\text{O}_3 - \text{MgO} - \text{CaO}$ values for the ACM ternary diagram.

d: SiO_2 & $\text{Na}_2\text{O} + \text{K}_2\text{O}$ values for the silica-alkalies diagram.

The program uses the following subroutines which can be adapted for other purposes.

AFMBND: subroutine that draws AFM calc-alkaline - tholeiite boundary curve. This curve is defined by Irvine & Baragar (1971).

JENBND: subroutine that draws Jensen boundary curves as defined by Jensen (1976).

ALKBND: subroutine that draws SiO_2 vs. $\text{Na}_2\text{O} + \text{K}_2\text{O}$ boundary as shown by Irvine & Baragar (1971).

TRIANG: subroutine that draws the ternary diagram outline. Uses ISPP standard plotting routines.

TRI: subroutine that converts ternary values into x-y cartesian coordinates for plotting purposes.

CHEM: subroutine that calculates and adjusts various chemical components (SiO_2 , Al_2O_3 , Fe_2O_3 , FeO, MgO, CaO, Na_2O , K_2O , TiO_2 , P_2O_5 , CO_2 , S, H_2O^+ , H_2O^-) as read in from the main program.

BARTH: subroutine that calculates the BARTH-NIGGLI normative mineral calculation necessary for the Irvine & Baragar rock classification scheme.

IRVBAR: subroutine that calculates volcanic rock names according to Irvine & Baragar (1971).

JENSEN: subroutine that calculates rock names according to the classification of Jensen (1976).

2: JENSEN.BAS: A BASIC program that calculates volcanic rock names based on the major element chemistry (the same as SUBROUTINE JENSEN above).

3: EQUAL.FOR: A FORTRAN 77 program that plots linear and planar data on an equal-area projection using ISPP plotting procedures.

These programs were developed primarily for plotting lithochemical data, however they can be adapted to be used with other chemical components or solely for volcanic rock classification purposes.

References

Irvine, T.N.; Baragar, W.R.A. 1971: A Guide to the chemical classification of the Common Volcanic Rocks, Can. Jour. Earth Sc. vol. 8, pp. 523-546.

Jensen, L.S. 1976: A new cation plot for classify Subalkalic Volcanic Rocks, Ontario Div. Mines, Misc. Pap. 66, 22p.

The Association of Exploration Geochemists or anyone else affiliated with the authorship or distribution of the computer programs assumes no responsibility for any problems or errors that arise from the use of any of the programs. All users assume use of the programs entirely at their own risk.

Please note that all orders for software should be accompanied by a cheque or money order and made to:

The Association of Exploration Geochemists
P.O. Box 523
Rexdale, Ontario
Canada, M9W 5L4

For further information, requests, or submissions, contact:

Eric Grunsky
Ontario Geological Survey
911-77 Grenville St.
Toronto, Ontario
Canada M7A 1W4
(416) 965-7046

JGE Publication

Issue	Year	Approximate Publication Date
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Vol 25(3)	1986	May 1986
Vol 26(1)	1987	August 1986

Future Meetings

**12th International Geochemical Exploration Symposium
4th Symposium on Methods of Geochemical Prospecting (12th I.G.E.S. - 4th S.M.G.P.).
Orleans, France,
April 23rd-26th, 1987**

Second Call For Papers

Sponsored by the Association of Exploration Geochemists and the International Association of Geochemistry and Cosmochemistry working group, the Bureau des Recherches Geologiques et Minières (BRGM) will host the 12th I.G.E.S.-4th S.M.G.P. at Orleans La Sources, France, from April 23rd to 26th, 1987. Proposals for papers and posters on the following topics are invited

o Integrated Mineral Explorations combining Geochemical Techniques and

other approaches.

o Geochemical Prospecting for Precious Metals.

o Geochemical Exploration under extreme climatic conditions (Deserts, Tropical Rainforest) with emphasis on weathering effects.

o Recent Developments in Analytical Chemistry, Data Processing, Expert Systems, Hydrogeochemistry

Proposals must be submitted in French or English as extended abstracts (up to 1000 words) by November 30th, 1986 to:

The Organizing Committee,
12th I.G.E.S. - 4th S.M.G.P.

BRGM

B.P. 6009 45060 Orleans
Cedex 02 France

International South European Symposium on Exploration Geochemistry - Athens, Greece, November 10-11, 1986

Final Notice

The Institute of Geology and Mineral Exploration (Greece) and the Association of Exploration Geochemists is sponsoring the International South European Symposium in Exploration Geochemistry. This Symposium will be held in Athens, Greece, on November 10-11, 1986. The program includes two days of technical sessions (general and special sessions, poster presentations and exhibitions), field trips and program for guests and spouses. Members who did not receive the second circular can obtain one through the AEG Rexdale Office.

Registration and a welcoming reception on November 9, 1986. For further information and registration forms write to:

Organizing Committee
International South European Symposium in Exploration Geochemistry
Institute of Geology and Mineral Exploration
70 Messoghion Street, 115 27
Athens, Greece
Telex: 021 6357 IGME GR

**Short Course
Exploration Geochemistry:
Design and Interpretation of
Soil Surveys
Denver, Colorado
February 20-23, 1987**

A Society of Economic Geologists short course will be held jointly with the Association of Exploration Geochemists from Thursday, February 19th to Monday, February 22nd, 1987 in Denver, Colorado immediately prior to the 1987 Winter meeting of SEG with the AIME.

The course is designed to update practising exploration geologists on design, implementation and interpretation of soil geochemical surveys including choice of appropriate analytical and statistical methods. Case studies will be used as worked examples to illustrate both the problems that can

arise, and the benefits of a systematic approach to anomaly definition and rating based on sound understanding of geochemical processes in surficial media.

Instructors will be W.K. Fletcher, S. Hoffman, M.B. Mehrtens, A.J. Sinclair and I. Thomson. The basic registration fee of \$320.00 U.S. includes all course fees, Volume 3 of Reviews in Economic Geology, coffee and lunches on the meeting days. An additional fee of \$100.00 U.S., based on double occupancy will be charged for those requiring accommodations at the hotel.

Deadline for registration is January 10th, 1987. For information and registration forms, contact: Lois Elms, Western Experience, 2369 Carriage Circle, Oceanside, CA 92056, 619-722-0027.

Requests for Employment

GEOCHEMIST, PhD, with 15 years surface and subsurface experience in volcanic, metamorphic, and sedimentary terrains and broad background in geologic mapping, geophysics, and computer applications seeks position to continue work in gold exploration. Please call 702-331-4223.

Future Meetings Continued

**EXPLORATION '87,
Third Decennial International
Conference on Geophysical and
Geochemical Exploration for
Minerals and Groundwater,
Toronto, Ontario, Canada
September 27th to October 1st,
1987**

The theme of EXPLORATION '87 is centered on geophysical and geochemical methods and their roles in modern exploration for mineral, groundwater and geothermal resources; recent advances in methodology, instrumentation, field procedures, data processing and interpretation as well as on trends for the future. Emphasis

will be placed on the presentation of case histories and on the application of these sciences in developing countries.

This theme will be elaborated through lectures, seminars an exhibition, poster sessions and in field schools. Post conference visits to instrument manufacturers, geoscience laboratories and service companies will be provided for those interested.

For more information contact:

EXPLORATION '87
c/o 222 Snidercroft Road
Concord, Ontario
Canada L4K 1B5
Telephone: (416) 669-2280
Telex: 06-964570
Fax: (416) 669-5132

AEG Special Volume 12 - Additional copies available to members

The Association's Special Volume No. 12, Writing Geochemical Reports by S.J. Hoffman, has been distributed free to all members who have paid their 1986 dues. Additional copies of this informative publication may be obtained by members from the Association's Rexdale Office at a cost of \$7.50 Cdn. (\$5.00 U.S.).

Annual Meeting

Minutes of the Annual General Meeting of the Association of Exploration Geochemists held in Lecture Hall Number 2, Instructional Media Centre, University of British Columbia, Vancouver, B.C. on May 13th, 1986.

The meeting was called to order at 4:33 p.m. PDT by the President, I. Thomson. Thirty-seven persons were present of whom 28 were members. The President declared the meeting to be quorate and tabled the Agenda.

1. Appointment of Scrutineers for the Ordinary Councillor ballot

The President stated that the ballots for the 1986-88 Ordinary Councillor election had been counted by the Association's Auditor, Doane Raymond. He appointed J. Gravel and A. Coope to open the sealed ballot return, scrutinize

the result and report the result. The sealed ballot return was delivered to the scrutineers by the Secretary.

2. Minutes of the 1985 Annual General Meeting,

The President stated that the minutes of the 1985 Annual General meeting had been published in the July 1985 (No. 52) issue of the Newsletter and asked if there was any discussion on the Minutes. There being none, he asked for a motion of acceptance. It was so moved (Closs) and seconded (Smee) that the Minutes of the 1985 Annual General Meeting be accepted. Passed unanimously.

3. Matters Arising

There were no matters arising from the Minutes.

4. President's Report

The President, I. Thomson, delivered his report.

5. Secretary's Report

The Secretary, R.E. Lett, delivered his report. The President invited discussion from the floor on the Secretary's Report. L. Clark asked for further details on the membership decline. Lett replied that the paid-up 1986 membership was presently 715 and that he expected the final number of 1986 members would be 900. L. Clark remarked on the problems of Annual Dues payment in U.S. dollars and asked if payment could also be made in Canadian dollars. Lett explained that the Association's single largest annual expenditure of funds was the payment of the Elsevier account for the Journal of Geochemical Exploration which was

continued on page seven

Annual Meeting continued

in U.S. dollars. Consequently, dues payments had been requested in U.S. dollars to avoid variation of exchange rate. However, he explained, the mechanism for Annual Dues payment was under review. There were no further questions from the floor.

6. Treasurer's Report

The Treasurer, L. Bloom, delivered her report. The Treasurer then presented the 1986 Budget and asked for a motion of acceptance. It was then moved (Coope) and seconded (Chaffee) that the 1986 Budget be accepted.

The President then asked for a motion to appoint the Association's Auditor for 1986. It was then moved (L. Bloom) and seconded (S. Hoffman) that Doane Raymond Chartered Accountants be appointed Auditor of the Association for 1986.

The President asked for discussion on the Treasurer's Report and the Budget.

E. Hoffman asked if consideration had been given to including paid adverts in the Newsletter as a means of decreasing costs. The President replied that adverts had been previously inserted, but had been mainly employed as a free service to publicize employment opportunities. L. Clark asked if cooperative support had been sought for the Distinguished Lecturer Series and for details of the cost savings in printing and distributing the April 1986 Newsletter. The President replied that no cooperative support had been sought for the Distinguished Lecturer Series. Lett replied that the cost of printing and distributing the April 1986 Newsletter was

\$1,740 Cdn. compared to \$3,010 for the October 1985 Newsletter. C. Dunn asked if the estimate of revenue from Dues payments was realistic in view of the Membership decline. Bloom stated that a conservative estimate of 900 members had been employed, but that this included students, affiliates and voting members. E. Hoffman asked if those members who had not paid 1986 Annual dues received the Journal. The

President confirmed that only members who had paid their 1986 dues received the Journal. A member asked if the bibliography supplement distributed with the Newsletter should be published annually rather than with each Newsletter. The President explained that Council had discussed publication bi-annually rather than four times a year. A member asked if a membership list would be published in 1987. The President replied that the membership list would be published and distributed in 1988. Chaffee asked for details of the Association's investment policy. The President replied that the current policy was conservative and involved investment of capital in 30 day term deposits. He stressed that revenue from investment was largely limited by the non-profit status of the Association. S. Church asked if the Association could publish a directory of Service Organizations similar to that currently available from the North West Mining Association. The President complimented Church on his suggestion and stated that Council would discuss the idea. There were no further questions and the President asked for a vote of acceptance on the 1986 Budget and the motion to appoint the Auditors. Passed unanimously.

7. Admissions Committee Report

The Secretary stated that he had received a preliminary Admissions Committee Report from L. James (Committee Chairman). James reported that 208 candidates had been recommended for membership including 135 Affiliate and Student Members who had applied during the 11th International Geochemical Symposium.

8. Introduction of the 1986-87 Executive

The President introduced the 1986-87 Executive to the members present.

President G.H. Allcott
Vice President S.J. Hoffman

Vice President M.A. Chaffee
Secretary R.E. Lett
Treasurer L. Bloom

9. Announcement of the 1986-87 Ordinary Councillors

The President invited A. Coope to announce the result of the Ordinary Councillor Ballot. Coope stated that the Association's Auditor had recorded 177 unspoiled ballots. On the basis of the ballots counted the following Ordinary Councillors were elected from the nine candidates.

C. Dunn
D.M. Jenkins
M. Mason
W.R. Millar
C.E. Nichols
J.P.G. Saheurs

The retiring President, I. Thomson, also serves as an Ordinary Councillor for the 1986-87 term. The President, I. Thomson, asked for a motion to destroy the ballots. It was so moved (Elliott) and seconded (Smee) that the Secretary destroy the ballots. Passed unanimously.

10. Transfer of Meeting

The President, I. Thomson, transferred the meeting to the President-Elect, G. Allcott. The President, G. Allcott, welcomed the new Executive and Councillors and invited the Past President to deliver his address.

11. Presidential Address

The Past President, I. Thomson, delivered his address.

12. Other Business

There was no other business.

13. Adjournment

The motion of adjournment for the 1986 Annual General Meeting was made by P. Theobald and seconded by S. Church at 5:26 p.m. PDT. Passed unanimously. The President thanked the members present for attending.

GEOEXPO/86 Publication

The proceedings volume of the recent GEOEXPO/86 symposium is scheduled for publication about February 1, 1987. A majority of papers describe case histories and exploration methodologies associated with precious metal deposits of the Western Cordillera, although other subjects of topical interest are also included. This volume is available for purchase to AEG members at a special prepublication price of Cdn. \$35.00 (U.S. \$25.00). Unfortunately, complimentary distribution of the volume to AEG members is not possible. Prepublication deadline is

February 1, 1987. Thereafter, the purchase price to AEG members will be Cdn. \$45.00 (U.S. \$35.00). A limited number of extended abstract volumes are still available at a post paid price of Cdn. \$8.00 (U.S. \$6.00) for those interested in a record of the meeting.

Financial considerations require that there be a limited printing of the proceedings volume to meet anticipated requirements. It would be of great assistance to the organizers if AEG members make their requirements known as soon as possible.

Executive

President:

G.H. Allcott
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U.S.A. Phone: (703) 648-6100

Vice Presidents:

S.J. Hoffman
BP - Selco
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M.A. Chaffee
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R.E. Lett
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L.B. Bloom
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Canada

Councillors:

1986-87
R.G. Garrett
R.K. Glanzman
B. Hitchon
B.W. Smees
A.E. Soregaroli

1986-88
C. Dunn
D.M. Jenkins
M. Mason
W.R. Miller
C.E. Nichols
J.P.G. Saheurs
I. Thomson

Australian Regional Councillor
B.L. Farrell

European Regional Councillor
E. Wilhelm

Southern Africa Regional Councillor
G.L. Coetzee

Brazilian Regional Councillor
R.W. Lewis Jr.

Northern Countries Regional Councillor
A.J. Bjorklund

To keep your newsletter intact, please use photocopy.

I wish to purchase ___ copies of the GEOEXPO/86 symposium volume.

(Note: Price before Feb. 1, 1987 is \$35.00 Cdn. (U.S. \$25.00)
Price after Feb. 1, 1987 is \$45.00 Cdn. (U.S. \$35.00))

Address all enquiries to: GEOEXPO/86
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Canada

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