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About the Cover

The photograph is of a wooden statue spotted in one of the gift shops at the Kananaskis Lodge and was taken by Art Carlyle, the photographer at the Annual General Meeting. The statue was carved by Mr. Elmar Schultes of Delta, B.C.

By the way, both statues disappeared from the shop by the end of the Convention. Any idea who purchased them?
Passive/Active Locators: model 650 and 610 feature three selectable frequency ranges, both conductive and inductive coupling, upright operation, push-button depth measurement.

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Ferromagnetic Locator: new 890B iron and steel locator scans deep for valves, vault covers, curb stops; masks out metal debris like bottle caps & cans, etc.; improved visual and audible signals for easier use.

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I would like to express my thanks to all my fellow professionals for allowing me the privilege of serving as your 83rd president.

It is my pledge during my tenure of office to carry out my presidential responsibilities at the highest professional level, to the best of my ability, and maintain the dignity of that office which has been established by my predecessors.

Over the past several months there has been a flurry of meetings in various regions of the province and also there have been questionnaires circulated searching for the input of the members into a Strategic Planning process. The information obtained from members and clients has been analyzed and assessed by our consultant, Grant Hammond, during what has been called the audit phase. This phase has provided the necessary information to establish and address the strengths and weaknesses of the Association. When looking at the number of weaknesses that have been identified, they should not be considered as negative as the process recognizes what needs to be addressed and if taken in small, manageable chunks can be put in perspective and dealt with. To put it in the words of my immediate predecessor, you can’t put out a fire unless you know the type of fire you are fighting.

The next phase of the process is the most crucial in ensuring the success of our plan and that is the implementation process. Our consultant has laid all the ingredients before us in order to establish an implementation plan. It is now up to the Association to sift through the ingredients, establish priorities, set goals, and establish resources and implement them. As this is a membership driven process, members will be called upon to assist in reaching these goals.

"...the phases of the Strategic Plan are not cast in stone and should be revisited when conditions or situations arise that require them to be changed or massaged in order for them to work."

It should be realized that there will be short, medium, and long range goals established with five years being the long range. Also, it should be noted that the phases of the Strategic Plan are not cast in stone and should be revisited when conditions or situations arise that require them to be changed or massaged in order for them to work.

The consultant’s report has identified at least three concerns of the members which are paramount. These are the expanded profession, education, and external and internal communications. It is difficult in my mind which of these has number one priority but I would support the Expanded Profession as I see the surveying profession being slowly eroded by other disciplines. This is also evident in three of our sister provincial organizations where they have been called on recently to defend their position in society.
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EXECUTIVE DIRECTOR'S REPORT

by Brenwyn M. Cooley

As we move out from under the paper and long "to do" lists as a result of the 1992 AGM in Kananaskis, my staff and I have been working with members of Council to review committee terms of reference, committee membership, the schedule for implementing the Strategic Plan, etc. I am pleased to advise that all members will receive the following information by the middle of June:

2. Schedule for Strategic Plan Implementation
3. Schedule of Meeting Dates
4. Amended Association Bylaws
5. Amendments to the Manual of Good Practice

Preceding the AGM, as the ALSA Member on the University of Calgary Advisory Committee, I attended what has become to be known as "Cadastral Day" on April 22nd. Bob Baker and I met with Dr. McEwen, Dr. Lachapelle, Jim Sharpe of British Columbia, David Quirk of Saskatchewan, and Les MacLaughlin of Manitoba. It was an excellent meeting with good dialogue and exchange of information and ideas. A summary of the meeting appears on page 18 in this issue of ALS News.

April 6th and 7th were the dates of the ALSA Professional Examinations. As a note, if any of the students or principals reading this ALS News have recommendations with respect to text books, reference material, etc. that can be incorporated into the Association Library we would be pleased to hear from you. We wish to ensure that our library is a useful resource to the students and remains up to date.

Subsequent to the elections held on April 25, 1992 at Kananaskis, the ALSA Council members for the 1992/93 year are as follows:

President:
R.F. (Bob) Baker
(term - 1992/93)

Vice President:
H.E. (Hugh) Impey
(term - 1992/93)

Past President:
G.L. (Gordon) Haggerty
(term - 1992/93)

Secretary Treasurer:
W.R. (Bill) Dabbs
(term - 1992/94)

Councillors:
R.H. (Rick) Beaumont
(term - 1991/93)
L.H. (Lyall) Pratt
(term - 1991/93)
F.H. (Francis) Prefontaine
(term - 1991/93)
D.A. (Al) Jamieson
(term - 1992/94)
A.W. (Al) Nelson
(term - 1992/94)
J.D. (John) Wallace
(term - 1992/94)
K. (Kurt) Gesell
(appointed public member)

The ALSA office and Convention Committee have received numerous compliments, bouquets, etc. on this year's Annual General Meeting and Convention which are very much appreciated. Because of the feedback the "traveling road show" received whilst meeting with members on the Strategic Plan over the past number of months, adjustments were made to the convention schedule and general meeting format. If any of you have further suggestions for improvements, please do not hesitate to let us know as it is important to make sure the AGM is as productive as possible and yet provides a balance of social interaction.

In closing, I wish to thank the many members who signed our committee volunteer sheets or who have called to volunteer their services. By the time this issue is mailed, most of you will have been called with details as to the respective committee activities.
ASSMT

The Alberta Society of Surveying and Mapping Technologies looks forward to our continued relationship with the ALSA and its members. Your support at the 83rd Annual General Meeting in Kananaskis has given us strength and conviction in our direction. It is hoped that we will be able to generate a more positive, involved atmosphere towards the Society through education, dedication, and networking with all representatives within the surveying and mapping community.

Our continued liaison can be instrumental to the success of both our organizations as well as individual goals. ASSMT is confident that the surveying and mapping community will benefit from our continued relationship and is dedicated to this goal.

In closing, I wish to thank the ALSA and its members for their continued support and wish you all a great summer.

AL BOWLER, CST
PRESIDENT, ASSMT

Are You a Goose?

When you see geese heading south for the winter flying along in a "V" formation, you might be interested in knowing that science has discovered about why they fly that way. It has been learned that as each bird flaps its wings, it creates an uplift for the bird immediately following. By flying in a "V" formation, the whole flock adds at least 71% greater flying range than if each bird flew on its own. (People who share a common direction and sense of community can get where they are going quicker and easier because they are travelling on the thrust of one another.)

Whenever a goose falls out of formation, it suddenly feels the drag and resistance of trying to go it alone, and quickly gets back into formation to take advantage of the lifting power of the bird immediately in front. (If we have as much sense as a goose, we will stay in formation and so will those who are headed the same way we are going.)

When the lead goose gets tired, he rotates back in the "V" and another goose fills the point. (It pays to take turns doing hard jobs.)

The geese honk from behind to encourage those up front to keep up their speed. (What do we say when we honk from behind?)

And finally, when a goose gets sick, or is wounded by gun shot and falls out, two geese fall out of formation and follow it down to help and to protect it. They stay with the goose until it is either able to fly again or until it is dead, and then they launch out on their own or with another formation to catch up with their group. (If we have the sense of a goose, we will stand by each other like that.)

WRITTEN BY TONI WORSHAM
SUBMITTED BY MILTON E. DENNY
THE ARIZONA SURVEYOR
MARCH, 1992

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Being the Survey Program Manager for the Regional Surveyor's Office of Energy, Mines and Resources, I am often confronted by client departments with that particular question. What's a survey worth?

This question is about as easy to answer as having a handful of surveyors agree on the exact location of a natural boundary. Why is this? Why should there be such a difference in rates charged from one surveyor to the next?

We are all professionals with years and years of formal education and training, yet some surveyors insist on charging our services out at unreasonably low rates. By charging low rates the surveyor can seldom afford to keep good, experienced staff employed full time, not to mention being able to keep up to date with new technology, buy new software, hardware or provide training for staff. This in turn, has a crippling effect on those students in our colleges and universities who would like to pursue surveying as a career. No one in their right mind wants to go into a career which can only employ them on a part time basis.

Furthermore, by charging low rates, surveyors tend to create confusion amongst the public as to what a survey is really worth or what a surveyor really is.

It's about time surveyors started charging realistic rates for their professional services. Surveyors have to convey to the public that professional image they worked so hard to achieve. Furthermore, charging realistic rates will help to stabilize the surveying profession, make it more appealing to students, and thus ensure the future of our proud, unique profession.

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FAX: 276-5670
Destruction of the survey fabric is an ongoing concern that makes our work more difficult and costly, and reduces the reliability of boundaries. It is a problem that we must all try to correct. To this end, I have recently started a public education campaign with respect to the destruction of survey posts due to current fencing practices.

I have prepared a handout briefly explaining the problem and offering an alternate procedure for building a wood fence. I have talked to many people in the community about the problem and they all agree that the current practice of placing a fence post on top of the survey post needs to be changed.

When I am asked to do a survey for fencing purposes, I always give the client a copy of the enclosed handout. I also suggest to them that if they hire a fencing contractor, they should make it clear that if the contractor destroys or disturbs a survey post he will not be paid.

PAUL C. STOLIKER, A.L.S., C.L.S., M.S.C.
ASSOCIATION NOTES

New Members

597 YANISH, Steven Thomas

Steve Yanish is a native Edmontonian born on November 7, 1958. He graduated from M.E. LaZerte Composite High in 1976, received a diploma in Survey Technology from NAIT in 1983 and a B.Sc. in Geography, specialization in Survey Science from the University of Alberta in 1989.

Bruce Winton, A.L.S. served as principal from 1989 to 1992. The topic of the technical report submitted in partial fulfilment of the qualifying examination was "Terrain Modelling and the Professional Surveyor". Commission as an Alberta land surveyor was granted on April 7, 1992.

Steve began surveying in 1977 with W.D. Usher & Associates. He worked on many projects including the early stages of the Syncrude Project in Fort McMurray, Energy, Mines and Resources, Canada; Coordinate Surveys; Canadian Engineering Services; and the City of Edmonton were a few of his other employers. Steve is presently employed with McElhanney Land Surveys (Alta) Ltd. in Edmonton and is also a member of CISM.

Hobbies include travelling, scuba diving, hockey, gardening, and history. Steve and his wife Tami reside in Edmonton.

598 DIXON, Paul Scott

Paul was born in Edmonton, Alberta on December 7, 1962. He graduated from St. Francis Xavier in 1980 and received a B.Sc. in Survey Science from the University of Alberta in 1987.

Articles were served under Brian Dixon, A.L.S. from 1987 to 1992. "Survey Parcel Data Base Creation" was the topic of Paul’s technical report submitted as part of the qualifying examination. Commission as an Alberta land surveyor was granted on April 14, 1992. Paul is also a member of the Canadian Institute of Surveying and Mapping.

Paul has been employed by Stewart Weir & Co. since 1987 and during that time has been involved in legal surveys, right-of-way surveys, Alberta parcel mapping, and GPS projects. He was also involved in surveying the Edmonton & Calgary transportation utility corridor.

Skiing, camping, fishing, and playing with computers are activities that Paul is involved in when he finds the time.

New WCBE Registrar Appointed

Effective May 1, 1992 Dr. Alec McEwen was appointed Registrar of the Western Canadian Board of Examiners for Land Surveyors. Dr. McEwen replaces Mr. Tom Swanby, A.L.S. who has been Registrar of the WCBE since its inception in 1981.

Reproduction of Plans of Survey

It has been brought to our attention by an Alberta land surveyor that certain methods used to reproduce plans of survey for registration are not acceptable for archival purposes. It appears that after several months, the information on the plans starts to wear or peel leaving the plan unreadable and therefore, unacceptable for registration.

From the information we have gathered, it appears that any plotter systems or engineering xerographic systems that are toner based are not good for archival purposes. The best methods that we are aware of are still ink based plotter systems or photographic systems.

We would therefore, ask that any survey companies having any work done by a reproduction company ensure that the plans of survey are not toner based. The surveyor must ensure that all reproductions intended for registration at the Land Titles Offices are good for archival purposes.

If you have any further questions, please do not hesitate to contact our offices.

EDMONTON AND CALGARY LAND TITLES OFFICES

Surveyors on the Move

The telephone number for the Eastern Irrigation District (Cam Christianson, A.L.S.) has changed to 362-1418.

MidWest Surveys Inc., Medicine Hat Branch, has relocated to 906 - 16 Street S.W. Phone and fax numbers have not changed.

Effective April 9, 1992 Leo Raessler, A.L.S. became the full-time resident land surveyor in the Slave Lake Branch office of The Cadastral Group Inc.

Ron Robinson, A.L.S. is employed by Challenger Surveys & Services Ltd. in Calgary effective March 27, 1992.
Recommendations Voted on at the AGM
Report Regarding the Disposition of Recommendations Voted on at the Annual General Meeting Held in April, 1992

RECOMMENDATION #1
Proposed Amendments to the Alberta Land Surveyors' Association Bylaws

The proposed amendments were by in large approved. Some minor adjustments to wording and sequence were made. The amended Bylaws will be circulated to the membership in June 1992.

RECOMMENDATION #2
Proposed Amendment to the Alberta Land Surveyors' Association Mandatory Insurance Bylaw

That Section 6 of the Mandatory Insurance Bylaw be amended to read:
6. The minimum deductible shall be $5,000 per loss.

The motion to accept this recommendation was carried.

RECOMMENDATION #3
Proposed Amendments to the Alberta Land Surveyors' Association Manual of Good Practice

Part A, Chapter 3
Boundaries and Monumentation; Chapter 6
General Requirements for Plans; Chapter 9
Right-of-Way Surveys; and
Chapter 12 - Descriptive Plans
were passed as recommended with minor changes in wording.

Updates to the Manual of Good Practice will be forwarded to the membership in June.

Part B, Chapter 3
Technical Labour Sub-Contracting

This part of the Manual of Good Practice was amended by adding the words "who is (are) a member in good standing of ASSMT (herein referred to as 'sub-contractor') not in his direct employ to supply labour and perform technical functions on his behalf. These technical functions do not include or encompass client liaison or new business development.

Part 2 and 3 of Chapter 3 remain as put forward. This section was carried as amended.

Part B, Chapter 4
Corporate Names

This proposed section of the Manual of Good Practice was not carried. The approval procedure for corporate names will remain a Council policy as follows:

A. Council will not approve corporate names which imply either the practice of land surveying or the practice of surveying unless the corporation/partnership applies for and is eligible to receive a permit to practice under the Professional Practice Regulation.
B. Corporate names which include the surnames of the land surveyor shareholders are to be encouraged.
C. Corporate names which include the surnames of non-professional shareholders will not be approved.

RECOMMENDATION #4
Proposed Amendment to Advertising Guidelines by the addition of #8

That an additional advertising guideline be added as follows:
8. Alberta land surveyors shall place identification signage on all road vehicles being used in the practice of surveying. Such signage shall indicate the company name and/or logo, but may also include the company address and phone number. The company name on the signage shall be a minimum of 5cm in height. When using sub-contractors, using their own vehicles, the previously mentioned requirements shall apply to those vehicles and any existing signage used by those sub-contractors must be covered entirely.

Two amendments to this recommendation were proposed as follows:

1. By adding "When using sub-contractors, using their own vehicles, the previously mentioned requirements shall apply to those vehicles and any existing signage used by such sub-contractors must be covered entirely".
2. The original motion was amended by substituting the word "field" for the word "road" and deleting the word "field" before surveying in the first sentence.

The motion as amended reads as follows and was carried.

That an additional advertising guideline be added as follows:
8. Alberta land surveyors shall place identification signage on all field vehicles being used in the practice of surveying. Such signage shall indicate the company name and/or logo, but may also include the company address and phone number. The company name on the signage shall be a minimum of 5cm in height. When using sub-contractors, using their own vehicles, the previously mentioned requirements shall apply to those vehicles and any existing signage used by those sub-contractors must be covered entirely.

RECOMMENDATION #5
Proposed 1992 Recommended Schedule of Professional Fees

This recommendation was defeated.

RECOMMENDATION #6
Proposed Regulation
That the Alberta Land Surveyors' Association approve in principle a regulation that would recognize Registered Survey Technologists under the Land Surveyors Act, 1981.

This recommendation was carried.

BRENWYN M. COOLEY
U of C Graduate Courses in Surveying Engineering - Fall 1992

ENSU 625
Navstar GPS: Theory and Applications
Overview of space positioning and navigation systems; concepts and general description. GPS signal description. Receiver and antenna characteristics and capabilities; internal navigation software capability. GPS error sources and biases; atmospheric delays, signal reflection and countermeasures. Mathematical models for static point and relative positioning. Kinematic single point and differential post mission and real time positioning and navigation. Land, marine and airborne applications. Telemetry link requirements for differential positioning. GPS software.

ENSU 627
Automatic Vehicle Location and Navigation
General concept of automatic vehicle location (AVL) and navigation. Applications of AVL systems. Overview of existing AVL systems. Components of AVL systems. Positioning systems for AVL. The AVL electronic map: map data bases; route data bases; best route algorithms. Study of the attributes of AVL systems from dispatch systems to individual systems. Assembling AVL systems.

ENSU 643
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Special methods and equipment for positioning and alignment of machinery: atomic particle accelerators, power generators and turbines, printing presses, steel mills, automobile, aircraft and other manufacturing jigs, radio telescope and satellite receivers, antennas, etc. Emphasis will be placed on the problems created when the highest possible precision is required for alignment and positioning in relatively confined spaces.

ENSU 689.08
Advanced Survey Law
A case study approach involving the investigation, discussion and analysis of legislation and judicial decisions relating to cadastral subject areas, including land boundary law; survey evidence; coastal and inland water boundaries; offshore oil and gas lease surveys; land titles and registration of deeds systems; adverse possession and prescription; conventional boundaries; the settlement of boundary disputes; land use planning and development; native land claims; professional responsibility and liability; copyright.

For more information contact the University of Calgary at 220-7104.

You only live once, but if you work it right, once is enough.

PRB Notes
After attending my first Board meeting, I was impressed by the dedication and effort of all the members. This impression has not changed. Unlike some others, the surveying profession is seldom in the public eye, however, when it is required, only then does the public realize how vital the surveyor’s expertise is.

This emphasizes the need for work of the best quality at all times, not only from the professional point of view, but also from the view of the one who is paying the bill.

As Public Member on the Board, it is reassuring to know that the surveying profession is continually striving for a better product and as a result, is achieving this end.

I would like to pass along an excerpt from a Royal Bank letter:

"According to Tom Peters and Nancy Austin in their book, a Passion for Excellence, they write, "Quality is not a technique, no matter how good. Any device to maintain quality can be of value. But all devices are valuable only if managed - at all levels - are living the quality message, paying attention to quality, spending time on it as evidenced by their calendars. And if managers, at all levels, understand that no matter where technology leads, quality control comes from people (starting in the mail room) who are committed.""

D.N. MACDONALD
PUBLIC MEMBER, PRB
New Appointments

Registrar and Secretary Treasurer

With the amendments to the Association Bylaws, the position of Secretary Treasurer and Registrar have been redefined.

J.E. Rasmussen, ALS, CLS, P.Eng.

W.R. Dabb, ALS, SLS, CLS, P.Eng

The Registrar remains an appointment by Council from among the members. It has also been defined as a part-time, paid position with duties and responsibilities assigned to ensure compliance with the Act, Regulations and Bylaws of the Association.

It is with pleasure that the Alberta Land Surveyors' Association announces the appointment of Mr. Jerald E. Rasmussen as Registrar.

Jerry holds commissions as an Alberta Land Surveyor, Canada Lands Surveyor, and a Professional Engineer. He has successfully operated a private practice land surveying and engineering company in Calgary since 1973.


The position of Secretary Treasurer was amended to an elected position for a two year term. The Secretary Treasurer’s responsibilities will include chairmanship of the Finance Committee.

Mr. William R. (Bill) Dabb was elected to the position for a two year term at the 1992 Annual General Meeting held at Kananaskis.

Bill holds commissions as an ALS, SLS, CLS and P.Eng. His career as an Alberta land surveyor commenced in 1962 and he has held positions in several organizations which mainly served the oil industry. Bill is currently President of All-West Surveys (1982) Ltd. with which he has been employed since 1973.

As an ALSA member, Bill has served on a variety of committees as well as Council since 1966.

Bill, as Secretary Treasurer, brings a balance of business and technical experience to complement this new Council position.

The duties and responsibilities of the Secretary Treasurer outlined in the Bylaws prior to the amendments in Kananaskis, have now been incorporated into the duties of the Executive Director, which is a full time, paid position.

Surveyor's Diary

June 1 - 4

The 15th Canadian Symposium on Remote Sensing - "A World of Application"

Metro Convention Centre

Toronto, Ontario

Contact: Nancy A. Prout

Tel: (416) 314-1330

June 1 - 6

1992 International GPS/GIS Conference and Training Program

Newport Beach, California

Contact: GPS/GIS '92

Conference Coordinator

Tel: (406) 248-6771

June 23 - 26

CISM Annual General Meeting

Whitehorse, Yukon

Contact: Stan Hutchinson,

Regional Surveyor

Tel: (403) 668-2636

July 12 - 16

Making Connections

URISA'92 30th Annual Conference

Sheraton Hotel

Washington, D.C.

Contact: URISA Secretariat

Tel: (202) 289-1685

August 2 - 14

17th Congress of the International Society of Photogrammetry and Remote Sensing (ISPRS)

Washington, D.C.

Contact: A. Stevens

Tel: (703) 648-5110

August 28

ALSA Golf Tournament

Sylvan Lake

September 21 - 26

Canadian Association of Petroleum Landmen

1992 Annual Conference

Banff, Alberta

Tel: (403) 266-8500

March 5 - 15, 1994

FIG XX Congress

Melbourne, Australia
U of C Cadastral Day Highlights

Faculty - The number of full-time teaching positions is unchanged from last year but there is one vacancy in the Spatial Information Systems area, following the resignation of Dr. I.K. Crain at the end of December 1991. This position has been advertised and a number of applications are under consideration. Dr. E. Anderson, a former Faculty member, returned as a sessional instructor during the Winter Term to each ENSU 457, Map Projections and Cartography.

Co-op Program - Although the co-op program proposed by the Faculty of Engineering continues to be a U of C priority, the lack of resources prevents its early implementation. Dr. Lachapelle reported that a proposed alternative is the introduction of an internship, under which students would leave the Surveying Engineering program after completing the Third Year to serve one year's employment with government or industry before returning to U of C to take the Fourth Year. A decision on this proposal will be reached by the end of the Summer 1992.

It was pointed out by some members that there could be difficulty in finding employers who would accept students for an entire year. Two consecutive periods of six months, one with a government agency and the other with industry, was considered to be a desirable arrangement.

The extent to which internship or co-op employment periods could be allowed to reduce the required service under articles will be reviewed by each provincial association.

Common Core - Dr. Lachapelle also reported on the current plans to restructure the existing two year common core, to permit the introduction of surveying courses before the Third Year. The Department of Surveying Engineering would prefer to offer its courses after the First Year, but a compromise solution may be to introduce them after three terms (1 1/2 years). A decision is expected by the Fall of 1992.

Name Change - The change of the departmental name to Geomatics Engineering has been recommended by the Engineering Faculty Council. It will be submitted for the approval of the General Faculties Council at its next meeting in May or June 1992.

Guest Lectures - The Chairman reported that speakers from the ALS and SLS associations had each presented a guest lecture for the Cadastral Surveys and Land Registrations Systems (Third Year) and the Survey Law and Land Use Planning (Fourth Year) courses. These lectures were well received and offered an excellent opportunity for students to meet members of the land surveying profession. It is proposed to continue the guest lectures for these courses next year, and all provincial associations are invited to participate if they are able to do so.

Graduate Program - A new graduate course, ENSU 699.08, Special Studies in Advanced Survey Law, was offered during Fall Term 1991. It consisted of 13 three-hour lectures held one evening each week at the U of C from September to December. A similar course will be offered during the Fall Term, 1992. Any commissioned land surveyor is eligible to take this course which is also available, but is not confined, to students wishing to pursue a Master's program.

Jim Sharpe suggested that there be an investigation into ways by which this cadastral course, and perhaps other courses, could be made available to people unable to come to U of C each year. For example, it may be possible to arrange satellite or video presentations.

Survey Field Camp - This consists of a three week course in August - two weeks of which are spent undertaking various field projects including boundary retraction at the U of C facility at Kananaskis. The remaining week is spent at the Department for the completion of field observations and survey computations.

Independent Project - This technical elective, available to Fourth Year students, consists of research, an oral presentation, and a written report undertaken individually by each student who selects an appropriate topic under the guidance of a supervising professor. Students identify the topic during the Fall Term and complete their report at the end of the Winter Term. Of the eleven students who enrolled in this course during 1991/92, four chose a cadastral topic.

Support for Cadastral Chair - Jim Sharpe proposed that the provincial contribution be based on a pre-determined membership figures and that the December 31, 1991 membership totals be used for the 1992 contribution. The total figure of 725 members for all four provinces would mean a contribution of $25,375. It was agreed that a figure of $35 per member be used.

BRENNYN M. COOLEY
EXECUTIVE DIRECTOR

Convention Notes

With another annual general meeting and convention safely behind us, I would like to take this opportunity to once again express my gratitude to the people that worked so hard on the convention committee to make it all possible. At times during meetings, it seems that we are spinning our wheels and making little progress, but it is in these sessions that the ideas and plans for an enlightening and entertaining meeting evolve and everyone's input is greatly appreciated.

Our contacts at the Kananaskis Lodge were most helpful and I believe the problems that arose were of a minor nature. In fact, it was very satisfying to have the problem of ever increasing registration numbers. It was good to see the attendance at the level it was as it exceeded my expectations.

The early bird prize of two nights accommodation at the Kananaskis Lodge was won by Dennis Tomkinson.

Bruce Winton is our Convention Committee Chairman for the 1993 AGM and Convention to be held in Edmonton. Anyone interested in serving on the committee should contact Bruce or the Association office.

In closing, I wish to thank all the people that offered their comments on the Convention - your feedback is very much appreciated.

JIM HALLIDAY, A.L.S.
The Second Annual ALS "Wild Invitational" North/South Hockey Classic

A Northern Perspective

The City of Calgary hosted an uncommon event on April 22, 1991; a professional hockey game after the conclusion of the NHL regular season. Unfortunately for local hockey enthusiasts, it was professional surveyors rather than professional hockey players who took the ice at the Crowchild Twin Arenas to demonstrate their skills.

The early demise of the Flames had a positive effect at the gates for this, the second annual ALS "Wild Invitational" North/South Hockey Classic. This year's showdown boasted a significant increase in fan attendance eclipsing last season's mark by over 500%. At one point, as many as eleven fans were identified, two of whom actually managed to stay awake for the full duration of the contest.

The North team came out flying in the first period, obviously and justifiably enraged about rumours that their southern counterparts had scheduled a clandestine practice prior to the big game. Stick to practicing "land surveying" boys.

Team North rode this emotional wave to a hard fought 14 to 7 victory, lead by a strong performance in net by goal tender, Dave Armstrong. It should be noted that Armstrong's humility and humble demeanour exhibited during post game festivities was inspirational to his team mates.

Team North Scorers:
- Roy Devlin
- Brian Doyle (2)
- Ron Hall
- Jim Harland
- Dave Higgins (2)
- John Ironstone (3)
- Doug MacAulay (3)
- Steve Yanish

Team South Scorers:
- Terry Hudema
- Al Jamieson
- John Matthyssen
- Jim Stuart (2)
- Bob Wallace (2)

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- Jim Stuart (2)
- Bob Wallace (2)

Both teams would like to express their appreciation to the referees, Tom Holt and Glen Kraeling; the time keeper, Lorraine Hornek; and the sponsors, P & K Instruments and Leica Canada Inc. Special thanks to Rag Kurash who promoted this very successful event.

DOUG MacAULAY, A.L.S.
A Southern Perspective

Spring is a wonderful time of the year in Calgary. It is a time when southern people shed their winter activities for summer endeavours.

Team South found it difficult to focus the team back to hockey after being on the golf course for two months. Hockey in April is not a custom for which we are familiar.

With all of these overbearing factors looming, Team South assembled a group of dedicated individuals. Utilizing their collective talents Team South put up formidable opposition to the vastly superior team North. Post game drug tests have yet to prove conclusive.

Having accessibility to year round outdoor ice has enabled Team North to train extensively, while Team South was pursuing warmer interests. One post game rumour has Team South

embarking on a comprehensive training program starting this fall which has forced Vegas to re-consider the present line on next year’s game. This may be all for not if a collective bargaining agreement is not reached with the Team South player’s association.

BOB WALLACE, A.L.S.
Sighting
by Alan Richards

It's the moose you tell me about. Crossing the clearing, breath flowering and rising in the air. The frozen air.

There are other stories. About the sheer pain of surveying at forty-odd below. About working with machines, resistant and sluggish. Bar stories. Accounts of how you got the cuts and the green swelling around your eye. About dropping into bed, too tired to eat. And getting up again to drive thirty miles into the bush before first light. All this I imagine.

You tell me this one. How you were laying out a cut line. So cold you cried as you drove the snowmachine into the bush.

You could have told your boss. You could have told him how it was too damn cold to work. You could have stayed, and your crew with you, in the radiated heat of the motel. Or the bar down the street. You wouldn't have made this sighting.

You left your snowmachine. Thumping your hands together to break the cold. To take another sighting. Then you could go back to the machine. To the truck thirty miles away.

To the motel. To a steak and beer. To bed or a rented movie on the motel TV.

The moose interrupted everything in the clearing as you entered it. Spreading antlers catching the falling winter sun. Heavy hooves compacting snow as he grazed last summer's grass and saplings.

You stood still. He lifted his head. The sun froze in a forgotten cold.

There was frost around his nostrils. Snow-crusted hair standing from his neck and flanks. And his breath. Blooming. Escaping. And there were his eyes. The darkness drinking you in.

Before he snorted and trotted, forelegs high, across the clearing cut now with a line of small shadowed craters in the snow, of crystalline vapour lost against a distant line, thick and green.

There could have been other stories. How the sun moved again only to escape you. You must have felt the cold return on the trip back, looking for the truck in the dark, the truck that damn near wouldn't start.

Looking for the highway, the steering wheel stiff under your hands. Perhaps chilblains. Perhaps dinner. And stories over a game of pool. All this I imagine.

It's the moose you tell me about.

EVOLUTION OF Low Cost GPS Equipment For Surveying

Dr. G. Lachapelle
CLS, P.ENG

Dr. M.E. Cannon
CLS, P.ENG.

Department of Surveying Engineering
The University of Calgary

Sample Performance

Demonstration of survey accuracy with low cost equipment was first achieved one year ago using Magnavox 4200D receivers (Cannon et al 1992). This single frequency C/A code, six channel unit weighs less than one kg, delivers raw pseudorange and carrier phase measurement, and has since been used extensively for surveying. The accuracy of the pseudorange and carrier phase measurements are somewhat similar to those of geodetic receivers, namely one to two metres and a few mm, respectively. The use of 30 minutes of observations normally yields baselines (≥ 10 km) with an accuracy of three to five ppm. Note that the accuracy level is limited to a few ppm when Selective Availability is on, regardless of the type of receiver used. The effect of Selective Availability can however, be largely removed by using postmission precise orbits if one is willing to wait for several weeks at this time.

An exciting low cost receiver which was unveiled last September is the GPS Card™, manufactured by NovAtel Communications Ltd. of Calgary (Fenton et al 1991). This single frequency, C/A code, 10 channel unit, which can be mounted into a PC with an available 2/3 board slot, has two unique characteristics, namely a 10 cm pseudorange accuracy and a high multipath rejection capability. The unit has been tested extensively by The University of Calgary during the past several months (Cannon et al 1992; Lachapelle et al 1992) using software packages developed by the authors. The quality of the pseudor-
ange and carrier phase measurements to provide accurate static differential positioning is shown in Figure 1 and Table 1. Figure 1 shows the accuracy of the GPS coordinates for a 700m baseline. Each one of the ten solutions was derived using only two minutes of pseudorange observations. The coordinate errors, which are mostly due to the above 10 cm pseudorange accuracy and residual multipath effects, are less than 40 cm in each case. The use of a standard C/A code geodetic receiver would yield corresponding accuracies of a few metres. These pseudorange solutions were then used to resolve and fix the carrier phase ambiguities. The corresponding carrier phase (fixed ambiguity) solutions are given in Table 1. The accuracy is better than one cm in each case. In practice, one would observe several more minutes to obtain a high level of reliability. These results show the capability of this new technology for rapid static surveying.

**Figure 1:**
Two minute pseudorange solutions for a 700m baseline

![Graph showing pseudorange solutions](image)

**Table 1:**
Two minute carrier phase solutions for the 700m baseline. The ambiguities were found using a least-square search technique.

<table>
<thead>
<tr>
<th>Solution</th>
<th>Δφ</th>
<th>Δλ</th>
<th>Δh</th>
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<tr>
<td>1</td>
<td>0.3 cm</td>
<td>0.0 cm</td>
<td>0.0 cm</td>
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<tr>
<td>2</td>
<td>0.6</td>
<td>-0.2</td>
<td>0.6</td>
</tr>
<tr>
<td>3</td>
<td>0.3</td>
<td>-0.2</td>
<td>0.5</td>
</tr>
<tr>
<td>4</td>
<td>-0.3</td>
<td>0.0</td>
<td>-0.4</td>
</tr>
<tr>
<td>5</td>
<td>-0.3</td>
<td>0.0</td>
<td>0.1</td>
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</tr>
<tr>
<td>10</td>
<td>0.0</td>
<td>0.2</td>
<td>-0.2</td>
</tr>
</tbody>
</table>

**Conclusions**

Low cost GPS receiver technology is now capable of survey accuracies. As more products become available, prices are likely to drop further. Although this technology requires slightly more training than the use of standard geodetic receivers at this time, it does provide an attractive alternative for selected survey firms and applications.

**References**


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Since the inception of the systematic review program in 1988, over fifteen hundred surveys and plans have been inspected and/or examined.

A number of plans have been found to contain fairly elementary drafting errors or omissions which seem to indicate that very little checking was performed before the plans were issued from the surveyor's office. Items of a minor nature are brought to the surveyor's attention with a suggestion that they be considered in the preparation of future plans.

A summary of the most commonly encountered problems follows:

If the method used in re-establishing lost corners is unclear, a suitable explanatory note shall be placed on the plan [Manual, Chapter 6-19(c)]. Occasionally we have noted incorrect statements with respect to re-establishment methods. For example: "Re-est. I. by intersection" when it is clear that the post was re-established by proportioning.

Complete descriptions of monuments found and placed are often omitted from the plans. Notations with respect to pits, mounds, trenches and marker posts should always be shown. References to monument descriptions and conditions in the field notes and on the plan are described in the Manual in Chapter 5-2(e) and Chapter 6-16 respectively.

Misclosures are discovered periodically during plan examinations. Some may be due to transposed figures or other drafting errors but others may result from blunders in the field which remain undetected. Minimum accuracies for errors of closure are specified in Chapter 2 of the Manual.

All hanging lines must be tied back or verified in some other manner. Ties to single ISS or other control markers should always be check-measured (Manual, Chapter 2-3).

Plans often omit a notation in the legend stating that iron posts are stamped with the permit number of the corporation or the practitioner's registration number (refer to the Manual, Chapter 3-9).

Some pipeline right-of-way plans persist in showing angles rather than full circle bearings. Chapter 6-13 of the Manual states that "directions shall be shown on all surveyed lines in the form of full circle bearings..." If the client requests that angles be shown, they could be added to a reproducible copy of the plan prepared for registration. Chapter 6-22(b) also makes reference to full circle bearings.

A few practitioners evidently do not understand the proper procedure for establishing a section or quarter-section corner from a witness monument. The procedure is outlined in Chapter 4-8 of the Manual.

The term "witness" should be reserved for original township subdivision surveys. If in the conduct of a survey performed under Part 3 of the Surveys Act, a post must be placed on an offset due to an obstruction at the true corner, such post is to be referred to as a "reference" post.

Plan scale ratios of 1:250, 1:300, etc. are encountered periodically. The official S.I. ratios of 1:1, 1:2, and 1:5 must be used. Furthermore, a bar scale must be placed on all plans. Refer to Chapter 6-5(c) of the Manual.

It is not uncommon to note dimensions on plans which differ significantly from those shown on prior plans. The surveyor must confirm his own measurements by closure or show them as "check measured" on his plan (see Chapter 6-21 of the Manual).

When retracing curvilinear boundaries, the radius from the original plan and the position of the original monuments shall be used, which may result in non-tangential curves. Chord or radial bearings should be shown on the plan (Manual, Chapter 4-12).

Other matters revealed during plan examinations are:
- Incorrect or incomplete descriptions of section and quarter-section corners.
- Symbols for planted iron posts too small. The symbols must be large enough to be clearly recognizable when the plan is microfilmed.
- Failure to identify government road allowances.
- Mixing grid and assumed bearings.
- Incomplete or incorrect wording in the Affidavit, affidavit of execution or the legend.

Matters of a more serious nature which require additions or corrections to registered plans include the following:
- Differences in figures between the main plan and details.
- Missing bearings and distances.
- Areas missing or incorrect. The sum of several individual areas disagrees with the total area in the legend.
- Incorrect figures.

The ranks of the Professional Audit Branch increased with the recent addition of a summer student. Erik Holmlund has just completed first year engineering at the University of Alberta and plans to transfer to the Surveying Engineering program at the University of Calgary. We trust that he will absorb a considerable amount of cadastral knowledge during his four month stay with the Association.
Matching Fees With Surveying Risks

by Stephen Vrabel

Everyone I talk to agrees that surveyors are not properly compensated for their service. Are we bad businessmen? I think the answer is obvious. How many of us work on a profit margin of 10% or less? If more money is coming in than your operating expenses, do you consider that profit?

We all agree that until we have paid all fringe benefits and overhead, we have not made any profit. Profit also should include:
- Substantial funds put aside for slow times such as now.
- Funds for employee benefits such as retirement, profit sharing, health, disability, sick leave, vacation, etc.
- Your own retirement investments.
- Do you want to have to work until you are 60, 70 or even 80 years old?
- Protection insurance to cover you when you retire, for all those bad surveys you signed years ago.
- Funds set aside for bad collections or deadbeat clients and write-offs/mistakes.
- Funds for future capital purchases, i.e., computers, plotters, total stations, GPS equipment, etc.
- Funds for your children’s education, braces, their start in life, etc.
- Funds for your medical disasters. These disasters seem to hit older people.
- Funds for a quality vacation each year to refresh the mind and body.

I want to get out of surveying when I am 45. At the rate I am going, 65 is more realistic. It shouldn’t be this way. We take on a tremendous amount of liability and train hard to get where we are. Why do we insist on lowering our self-esteem, self-worth and self-image?

If no new contracts came into your office, could you finish the projects you have, pay all the salaries, the rent, bills, loans, etc., and walk away with money? If you can’t, you are not properly compensated for your work efforts. Could you pay $100,000 over your insurance coverage for a claim against your E & O policy? In today’s banking situation, can you get a loan of $100,000 to buy new equipment?

My computer company just sent me our new annual maintenance contract. They are going to charge me $100 per hour with a two-hour minimum labour cost to repair my equipment. Parts are extra. They guarantee the work and parts for only 30 days. How long do you “guarantee” your survey? Do you receive $100 per hour with a minimum $200 charge?

I was shown a report on what it costs to build a $160,000 home. The builder’s profit was $22,000; the realtor, $4,500; recording fee and title insurance, $2,000; theft/vandalism, $500; cleanup and trash removal, $500; and survey, $500.

Most professionals base charges on the value of their service. What is the value of your survey expertise and liability? Is it worth $60 an hour? Is it worth $100 an hour? Don’t you think the time spent to stake the control for a bridge is worth more than the time spent to stake the corners of a lot for a fence? Most of us don’t think so because we charge an hourly rate. If the fence is wrong, what will it cost to replace it? What about the bridge?

I believe fees should be directly proportional to the potential risk we take in performing a particular survey.

---

Suggested Risk Exposure

Risk Line

Time Line

Percent of Risk

50/1 50/2 15/1 20/1 25/1 30/1 35/1 40/1 45/1 50/1 100/1 5 1,000/1 3,000/1

Exposure (Risk) (in $ thousands)
I believe fees should be directly proportional to the potential risk we take in performing a particular survey. Also, I feel another factor needs to be added in this equation: the time that exposure exists.

For example, if you conduct a complete boundary and topographic survey on a site that is not developed for years, the risk exposure is much greater than a house stakeout in a residential subdivision. A mistake has a greater chance of being found quicker on the house job than on the long term development project. Thus, an additional fee should be charged for the first survey because the exposure time is greater, and the land value probably will increase substantially over the years. The mistake you make when the land cost $5,000 an acre may not be discovered until a time when it is valued at $25,000 an acre. How much do you think you will be sued for?

Surveying time should not outweigh risk in determining fees. Realtors will charge 5, 6 or 7% on a site and sell it in one day or one year. Whatever the percentage, realtors determine the value of their services based on the value of the commodity they are selling, not the risk.

Attorneys many times will determine a percentage fee based on the value of their success. The attorney that handled the Texaco vs. STP case was paid $10 million for his efforts because Texaco had a lot to win in that case. Don't you have a lot to lose if you blow a survey?

The chart on page 26 outlines the worth of a surveyor's services and risk. The dashed line indicated the percent of the potential risk (in dollars) of a particular survey. The solid line represents an additional fee (in percent of risk dollars) to be added to the dashed line percent, based upon the length of exposure.

To this percentage, you should add whatever you consider your salary costs are to perform this survey. For example, a mortgage survey for a $150,000 home refinancing has very little risk. On the other hand, an attorney told me about a surveyor who had to pay $30,000 to build a seawall in the rear yard of a house because he located the improvements and canal improperly, and the future addition did not fit the conditions that physically existed. You might feel that the potential risk on this survey may be $40,000. How long? Most people move every seven years. Therefore, any mistake you make should be discovered in approximately seven years.

Use the chart to determine a more realistic level of risk. Start at the $40,000 level on the chart. Above this level, the risk line is at plus or minus 6.5%. Now check the time line for the seventh year - this line is located at plus or minus 0.75%. The sum of these two percentages is 7.25%, and 7.25% of $40,000 is $2,900.

Add to this figure other relevant costs. For instance, a $30/hour crew may spend four hours on the project, and a $15/hour drafts person may spend an hour and a half on the survey. You also should determine a minimum fee for your signature; I would suggest $100. Add these figures to the $2,900 risk amount and you should find that a minimum fee for this type of survey is $3,150 plus. I am told these surveys are performed for $150 to $250. Big difference, huh?

The most difficult exercise is learning how to recognize the potential risk.

The most difficult exercise is learning how to recognize the potential risk. I am aware of one survey company that performed what appeared to be a simple boundary and topographic survey of a site that included a lake. Later, the surveyor was accused of locating the lake improperly; he was sued for $1.5 million. The amount included several hundred thousand dollars of fill for the lake, along with about one year of lost rental income because the development project was delayed for that amount of time. The message here is learn to recognize your risk.

Nothing is going to change if no one is willing to take a chance. Someone has to take the lead. We all know there are those who will not change their way of thinking and are happy making $25,000 per year, while exposing themselves to millions of dollars of liability weekly. We cannot let those individuals set the standards for the rest of the profession.

I would like those of you who are serious about improving our profession - those who dare to call themselves professionals and who want to enjoy a better lifestyle - to make changes. For the next three months, use this chart on all new projects to determine your fees. At the end of this period you probably will find a decrease in the number of projects coming your way. However, your compensation will allow you to do a much more thorough job, thus limiting your liability. Plus, you will have received a fair fee.

To those who are willing to make the change, I take my hat off. To those who are not, I feel sorry for where you are taking the profession.

Stephen Vrabel is President of Consut-Lech Engineering in Pompano Beach, Florida
"Should/Shall"
by Ken Pawson

"If an ALS should meet a gal,
And should not be sure if he should or shall,
He should at once - you will agree -
Refer it to the Com-mit-tee.
If it all should prove too much for them
They shall take it to the AGM.
If the AGM should disagree
It's back to the same damn Com-mit-tee!
And if the gal has settled for a rigid fee -
It shall go once more to the Com-mit-tee!
Who shall act as they should to remove such stress,
And should so advise the ALS?"

(Rambling thoughts from an
old timer during coffee break! 24/4/92.)

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TOPOGRAPHICAL SURVEY PLANS
STAKE-OUT PLANS
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FIELD NOTE REDUCTION & CALCULATIONS
ARCHITECTURAL DRAWINGS, ELEVATIONS & DETAILING

Computer Assisted Drafting
- precision input
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Group Benefits Program

The Alberta Land Surveyors’ Association Group Benefits Plan was introduced to the membership on November 1, 1990 with the objective of providing a cost effective and soundly undertaken group benefits plan alternative to the high cost of individually sponsored programs. Underwritten by Laurentian/Imperial with claims paid here in Alberta, seven plan designs are offered covering the spectrum of employer sponsored employee benefits plan requirements.

Who is currently involved?

We are very pleased to take this opportunity to recognize those land surveying firms who have laid a solid foundation of support for the ALSA group benefits plan through their participating, establishing a base of more than 250 lives.

Alberta Land Surveyors’ Association
Cam-Alta Surveys Ltd.
Challenger Surveys and Services Ltd.
Cherwonick Surveys (1976) Ltd.
D.A. Watt Consulting Group Ltd.
Drake Surveys Ltd.
Interprovincial Surveys Ltd.
J. Stuart Engineering and Surveying Ltd.
J.K. Smith & Associates Ltd.
Kellam Berg Engineering & Surveys Ltd.
Northpoint Land Surveying Ltd.
S.M. Loepky & Associates Ltd.
Tronnes Surveys (1976) Ltd.
Usher Canada Limited
Walker Consulting Group Ltd.
Wolley-Dod & MacCrimmon Surveys Ltd./Maltais

Why should you be involved?

Association for the sake of co-operative pooling to strengthen buying power and increase influence in a tightening economy has become the major marketing strategy of the late 80’s and will continue through the 90’s. One only need look at the amalgamation of legal and account-

If you are interested in specific topics or have concerns in certain areas, please notify us and we will research and address it in future issues for the benefit of all land surveying firms.

If you desire more information on how the ALSA Group Benefits Program can benefit your organization, please contact:

Ross & Associates Consulting
#210, 4936 - 87 Street
Edmonton, Alberta T6E 5W3
Phone: (403) 465-3366
Fax: (403) 465-4351

David G. Ross, Benefits Consultant
Joanne O’Connell, Administrator

"There are seven sins in the World

wealth without work; pleasure without conscience; knowledge without character; commerce without morality; science without humanity; worship without sacrifice; politics without principle."
Supplement to the Register - 1992

The following persons/firms became registered subsequent to the 31st day of January, 1992:

ALBERTA LAND SURVEYORS

<table>
<thead>
<tr>
<th>Name</th>
<th>Registration Number</th>
<th>Address</th>
<th>Date of Commission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbis, W.J.</td>
<td>550</td>
<td>87, 1755 Rathburn Road E., Mississauga, Ont. L4W 2M8</td>
<td>1984.04.03</td>
</tr>
<tr>
<td>Drake, K.B.</td>
<td>418</td>
<td>Box 216, Grand Centre T0A 1T0</td>
<td>1977.06.24</td>
</tr>
<tr>
<td>Gradecki, L.R.</td>
<td>337</td>
<td>1st FL, 4999 - 98 Avenue, Edmonton T6B 2X3</td>
<td>1970.06.12</td>
</tr>
<tr>
<td>Hall, J.A.</td>
<td>225</td>
<td>6514 - 112A Street, Edmonton T6H 4R3</td>
<td>1956.11.02</td>
</tr>
<tr>
<td>Nichols, D.A.</td>
<td>477</td>
<td>General Delivery, Gournard T0G 1C0</td>
<td>1978.07.04</td>
</tr>
<tr>
<td>Trennes, K.G.</td>
<td>485</td>
<td>1405B - 2 Street W. T2R 0W7</td>
<td>1978.09.07</td>
</tr>
<tr>
<td>Yanish, S.T.</td>
<td>597</td>
<td>138, 14315 - 118 Avenue, Edmonton T5L 4S6</td>
<td>1992.04.07</td>
</tr>
</tbody>
</table>

RETIRED MEMBERS

<table>
<thead>
<tr>
<th>Name</th>
<th>Address</th>
<th>Date of Registration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heidebrecht, H.</td>
<td>37, 3149 Range Road 331, Sherwood Park T6B 1K5</td>
<td>1973.06.11</td>
</tr>
<tr>
<td>MacCrimmon, M.A.</td>
<td>29 Glencliff Drive S.W., Calgary T3E 4K4</td>
<td>1961.06.13</td>
</tr>
<tr>
<td>Tessari, E.R.</td>
<td>Box 50, Site 1, R.R. #2, Tofield T0B 4G</td>
<td>1961.07.17</td>
</tr>
</tbody>
</table>

SURVEYOR'S CORPORATIONS AND PARTNERSHIPS

<table>
<thead>
<tr>
<th>Name and Address</th>
<th>Permit Number</th>
<th>Date of Registration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barng Surveys Ltd.</td>
<td>P 172</td>
<td>1992.04.07</td>
</tr>
<tr>
<td>43 Oatway Drive, Stony Plain T0E 2G0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drake Surveys Ltd.</td>
<td>P 157</td>
<td>1989.09.15</td>
</tr>
<tr>
<td>Box 216, Grand Centre T0A 1T0 (4807 - 31 St.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6514 - 112A Street, Edmonton T6H 4R3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reid Crowther Surveys Ltd.</td>
<td>P 163</td>
<td>1990.10.09</td>
</tr>
<tr>
<td>7410 Blackfoot Trail S.E., Calgary T2H 1M5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schenkman Surveys Ltd.</td>
<td>P 171</td>
<td>1992.03.13</td>
</tr>
<tr>
<td>Box 8, Site 3a, R.R. #4, Calgary T2M 4L4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

BRANCH OFFICES

<table>
<thead>
<tr>
<th>Name and Address</th>
<th>Permit Number</th>
<th>Date of Registration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reid Crowther Surveys Ltd.</td>
<td>P 163</td>
<td></td>
</tr>
<tr>
<td>202, 714 - 5 Avenue South, Lethbridge T1J 0V1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ARTICLED PUPILS

<table>
<thead>
<tr>
<th>Name</th>
<th>Address</th>
<th>Principal</th>
<th>Date of Articles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Godard, J.C.</td>
<td>249, 309 - 2 Avenue S.W., Calgary T2P 0C5</td>
<td>W. Dabbs</td>
<td>1988.09.30</td>
</tr>
</tbody>
</table>

Puzzle Pad
by Paul Methuen

Answer to March 1992
Puzzle Pad

The puzzle is simply two equations with two unknowns, so $x + y = 80$ and $2x + 4y = 200$. There are 60 birds and 20 beasts.

New Puzzle

The following puzzles are submitted by Rod Nagina, A.L.S.

1. Two fathers and two sons are the sole occupants of a room, but there are not four people in the room. How many people are there? Explain.

2. Without lifting your pen off the paper draw four straight lines so that all the dots have a line through them.

- - -

- - -

- - -
PLAN TO ATTEND
The 28th
ALSA
Annual
Golf Tournament
August 28, 1992

The tournament will be held at
The Sylvan Lake Golf and Tennis Club.
As usual there will be on-course refreshments and lots of prizes.
If there are any parties interested in playing tennis instead of golf,
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Calgary, Alberta, Canada T2R 1K1

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Fax: (403) 228-7876

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Competition Closes May 29, 1992
Competition No. FLS92EM842-001
Send resumes, quoting competition number to:
Mr. Tim Osborne
Human Resources Division
6th Floor, 9945 - 108 Street
Edmonton, Alberta T5K 2G6
Tel: (403) 427-6768
Fax: (403) 422-4299

ALS NEWS VOL. XX1-3

Editor
B. COOLEY

Advertising and Production
S. STECYK

Deadline dates for submission of material to ensure printing are as follows:

January 1
March 1
May 1
July 1
September 1
November 1

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Alberta Land Surveyors’ Association
14403 - 115 Avenue
Edmonton, Alberta T5N 3B8
Tel: 403/452-7662
Fax: 403/453-1824

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Bob Baker at 452-7662

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<table>
<thead>
<tr>
<th>Distance Measuring Range</th>
<th>3,000 m (3 prisms)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>±0 mm (±1 ppm) m.s.e</td>
</tr>
<tr>
<td>Measuring Time</td>
<td>Fine mode: 4 seconds</td>
</tr>
<tr>
<td></td>
<td>Tracking mode: 0.5 sec. (1 km)</td>
</tr>
<tr>
<td>Angle Minimum Count</td>
<td>5” (switch selectable)</td>
</tr>
<tr>
<td>Angle Measurement Accuracy</td>
<td>3” standard deviation</td>
</tr>
<tr>
<td>Data Interface</td>
<td>RS-232C standard</td>
</tr>
</tbody>
</table>

Note: *Under good conditions.

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