Saskatchewan Land Surveyors' Association

Newsletter

President's Message to the Membership

By D. J. Clarke, SLS, P. Surv., President

The week of February 21-26 found Linda and I in Muskoka Township, Ontario attending the Ontario Land Surveyors AGM. The event was held at Deerhurst Resort near Huntsville Ontario. This is a very beautiful area with many lakes and rivers between rock ridges, and small mountains. It is called " cottage country " as the lakes are surrounded by summer homes for the people from the densely populated areas of Ontario and the United States.

This is the first time the Ontario Land Surveyors have had their AGM in a resort setting. They had their best turnout ever with many of the members bringing their families along for a winter holiday.

A couple of interesting points came out of the Presidents forum. The New Brunswick Surveyors are concerned that the Department of the Environments is now requiring water boundaries to be determined by an environmentalist.

In Ontario the Technical Standards and Safety Authority has determined that the planting of iron posts is " breaking ground " and therefore requires a utility locate.

Can you imagines getting a locate for every pin we plant?

During the meeting we learned that Ontario has designed a seminar for Party Chiefs. They put these seminars on in their five regional districts and found them to be very well attended.

A motion was put forth to have bylaw changes debated and voted on at the AGM. Currently bylaws are voted on by ballot prior to the AGM along with the voting for council members. The motion was carried.

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Inside This Issue

Advertisers

Spot the Phrase Contest - "Townships were to be designated by their position east or west of that particular meridian" (See page 43 for Contest Details)

Council Highlights

By: A. Carl Shiels, M. Sc., P. Eng., Executive Director

The ***Saskatchewan Land Surveyors' Association Newsletter*** is published by the Saskatchewan Land Surveyors' Association for circulation to its members.

Deadlines for articles will be the last Friday in December, March, June and September.

The opinions of the contributing writers may not be consistent with those of the Council of the Saskatchewan Land Surveyors' Association. Articles may be reprinted with appropriate credit given to the authors, unless it is under copyright.

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2004/2005 Council

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Executive Director's Note:

The last Council Meeting was held, by telephone conference, on January 8, 2005. A policy was adopted at that meeting which prevents publishing the highlights of Council meetings until the minutes of those meeting have been ratified. Since council has not met again since the January 8 meeting, no Council Highlights are available.

Letter to the Executive Director

from Fred Hutchinson, NSLS, Executive Director, ANSLS

Carl:

I always try to review the publications that cross my desk. The Newsletter from Saskatchewan is one of them. I noticed that you picked up on my article "Measure Twice, Cut Once". Feel free to visit www.ansls.ca and use one of my other articles that may be of interest.

I would like to comment on the noted highlights of your December 2, 2004 Meeting # 4. Corrections are in order! The introduction of mandatory continuing education has NOT resulted in almost twice as many discipline cases. No discipline cases have been started with respect to MCE. We have just finished our first year of a three year term. It may be that some members will choose not to participate in the program which can also be found on www.ansls.ca under the MCE button but any resulting action is a few years away.

No motion was passed in support of disciplinary action being taken against retired members. On the contrary...there was a comment made by the chair of the Complaints Committee that no action should be taken against these members since they no longer practice, are subject to the Board of Examiners if they reapply and the maximum fine is $2000, far below the cost of a discipline hearing. A note is placed in the members file of the committee's finding. The protection of the public is of prime concern and as long as the member is retired then the former member is prohibited from practice.

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Stroke and Heart Attack Procedures

Reprinted from "Evergreen State Surveyor" Volume 28, Number 4, 2004

This might be a lifesaver if we can remember the three questions! Is it a stroke?

Sometimes symptoms of a stroke are difficult to identify. Unfortunately, the lack of awareness spells disaster. The stroke victim may suffer brain damage when people nearby fail to recognize the symptoms of a stroke. Now doctors say a bystander can recognize a stroke by asking three simple questions:

- Ask the person to smile.
- Ask the person to raise both arms.
- Ask the person to speak a simple sentence.

If he or she has trouble with any of these tasks, call 9-1-1 immediately and describe the symptoms to the dispatcher. After discovering that a group of non-medical volunteers could identify facial weakness, arm weakness and speech problems, researchers urged the general public to learn the three questions. They presented their conclusions at the American Stroke Association's annual meeting last February. Widespread use of this test could result in prompt diagnosis and treatment of the stroke and prevent brain damage.

Heart Attack Self Help

A cardiologist says if everyone who gets this e-mail sends it to 10 people, you can bet that at least one life will be saved. Read this ... it could save your life!! Let's say it's 6:15 p.m. and you're driving home (alone, of course) after an unusually hard day on the job. You're really tired, upset and frustrated. Suddenly you start experiencing severe pain in your chest that starts to radiate out into your arm and up into your jaw. You are only about five miles from the hospital nearest your home. Unfortunately, you don't know if you'll be able to make it that far. You have been trained in CPR, but the guy that taught the course did not tell you how to perform it on yourself.

How To Survive A Heart Attack When Alone

Since many people are alone when they suffer a heart attack, without help, the person whose heart is beating improperly and who begins to feel faint, has only about 10 seconds left before losing consciousness. However, these victims can help themselves by coughing repeatedly and very vigorously. A deep breath should be taken before each cough, and the cough must be deep and prolonged, as when producing sputum from deep inside the chest. A breath and a cough must be repeated about every two seconds without let-up until help arrives, or until the heart is felt to be beating normally again. Deep breaths get oxygen into the lungs and coughing movements squeeze the heart and keep the blood circulating. The squeezing pressure on the heart also helps it regain normal rhythm. In this way, heart attack victims can get to a hospital. Tell as many people as possible about this. It could save their lives!

Saskatchewan "Facts"

Note: These "facts" have not all been confirmed for accuracy. The reader is encouraged to submit comments on the accuracy of these and any other Saskatchewan "Facts" they come across.

% The very first "Dairy Queen" was started in Melville, Sk., way back in 1953 and the original owner was Donald M. Patrick.

% Turtleford, Sk. has a "Giant Turtle" on display, right there in the town.

% The Province has three major river systems, all of which empty into Hudson Bay; the Assiniboine, the North and South Saskatchewan and the Churchill.

% Over one-half of the province, or approximately 3,450,000 sq. kms is covered by forests. Of the total forest area, 2,165,000 sq. kms are classified as commercially productive forest land and contain both hardwood and softwood species.

% The "MOP" was invented in Wolseley, Sk., and to this very day, Wolseley is the silicon valley of mop development.

% "Gordie Howe" was born near Saskatoon at Floral Sk.

(... more to come in future issues.)

Councillor's Corner

Did Somebody Say Becoming a SLS was Easy?

By Dale Rosnes, SLS, P. Surv.

The weather has been very nice this winter so it didn't give me a reason to sit down to write this. I've read the stories written in the Newsletter by other first year council members when they were initiated into this story ritual, and I promised myself I wouldn't get caught in the same situation. Here I am now, at the last minute, coming up with a story for the Newsletter.

Somebody mentioned at one of the AGM meetings that all the newly commissioned SLS's should get together and tell stories of their experience of becoming a Land Surveyor. I have never attended such a meeting, but here is my story.

It starts when I graduated from High School in 1975 and had a strong desire to be a draftsman. My dreams of being a draftsman were being fulfilled when I was admitted into the Drafting program at Sask. Technical Institute (STI). The course had a common first year for both Drafting and Surveying. The summer of 1977 was spent employed as a Draftsman, doing water bottom topography mapping at Gunnar Mines near Uranium City. The only way to get there was to fly in from Prince Albert. Goldak Exploration was doing the mapping as part of a project looking for Uranium deposits. My short stint as a draftsman quickly convinced me this was not the career for me. Considering things thus far, I decided to enter the Surveying program in the second year and so began my career in the survey industry when I obtained my diploma in 1978. I had been informed that people could obtain their commission as a Land Surveyor after two years of articling, but this would not be my experience.

Several employers were contacted in Saskatchewan, but all had already hired who they needed for that year. I then headed to Alberta to look for work, and was successful in getting a position as a rod man working at Walker Newby and Associates in Calgary. The bulk of the work was legal surveys in new urban development. I was promoted to party chief in 1979 and entered into an articling agreement with Judy Morisson, ALS. The ALSA did not recognize the STI program, so they were not willing to give me any credits towards some 16 examinations I needed to complete. An appeal of the initial assessment gave me two additional credits and reduced the requirement down to some 14 examinations. I recall taking courses during the evenings and on weekends and reducing my requirements down to nine examinations by 1981. I was evaluated when the ALSA switched to the new system and was still required to complete nine examinations. The depression hit hard in Alberta in 1982 in spite of Calgary's streets being "*paved with gold*" and "*jobs could be had*" - words in a radio song of the time. Bob Fulton, ALS called me into his office and advised me to look for other work.

Employment was obtained in August 1982 with Chris Everett, SLS at Prairie Surveys Ltd. in Regina. The work consisted of being a party chief doing all types of legal surveys, construction surveys and elevations for topographical mapping.

The University of Calgary admitted me into the Survey Engineering program in the Fall of 1986. It was interesting to find that my admission was based on my high school marks with no consideration having been given to my post-secondary education. The university had a policy whereby you had to complete the degree program within seven years of graduating from a secondary school, and I

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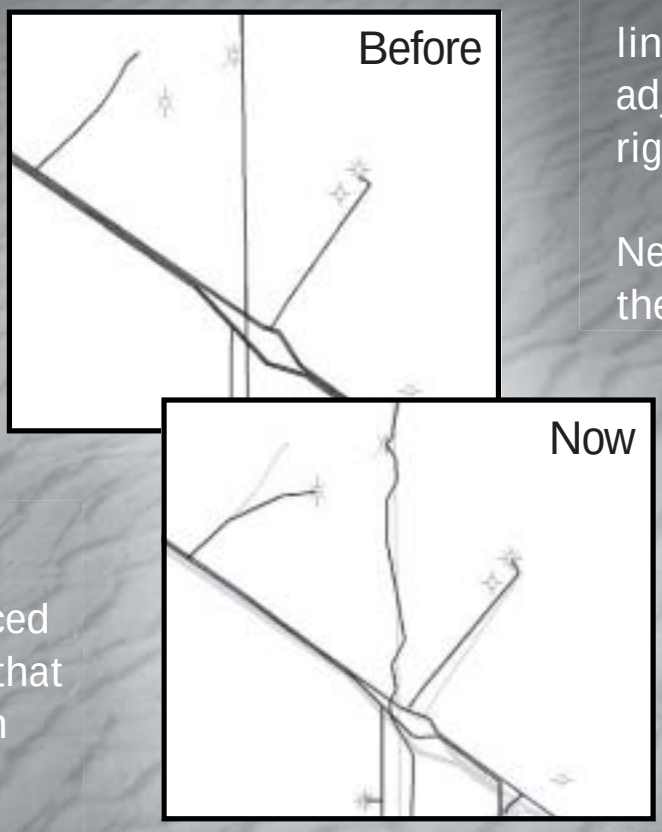

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Biography

By John H. Webb SLS (LM), ALS, MLS, CLS

Richard Carney Laurie (1858 – 1938) D.L.S; C.E. (RMC), M.L.S. (PLS), S.L.S

An Engineer, Land Surveyor, Contractor, Civil Servant, Entrepreneur, Newspaper owner and a military career that involved his participation in three wars. This outlines the life that Major Richard Carney Laurie lived prior to his demise on January 20, 1938 in Battleford, Saskatchewan.

His obituary in the Saskatchewan Herald on January 26, 1938 outlines in detail his outstanding life. In part it stated:

> *" He has left a record of loyalty to the empire and services to the community which has few equals in the annals of the West."*

Born in Owen Sound, Ontario, on January 31, 1858, he attended public school in Windsor, Ontario, until the family moved to Winnipeg in 1871, along with his three sisters. He attended Winnipeg College in 1873, graduating in 1876 with the distinction of mathematical medallist. In 1877, he joined the Winnipeg Free Press and at the same time he became a cadet at the Royal Military College in Kingston, Ontario from 1877 to 1880.

In 1881, he chose to use his profession as a surveyor and civil engineer and became a topographer on a survey party locating the Canadian Pacific Railway between Brandon and Moose Jaw in the North West Territories. When he returned to Winnipeg he articled as a land surveyor with Mr. George McPhillips, Dominion and Manitoba Land Surveyor and obtained his commissions in 1882 as a Dominion and Provincial Land Surveyor. It was Mr. Laurie, as an articled student, who came to Battleford in 1882 and surveyed the property of Mr. Alex MacDonald, which was to become the village of Battleford. Mr. McPhillips was in charge of the survey party.

Mr. Laurie hung out his shingle as a Surveyor and Engineer in Battleford on July 8, 1882. In conjunction with his private practice, he accepted the position of engineer and inspector of Public Works in the Battleford Public Works District in February 1897.

He started working under contract for the Dominion Government doing townsite surveys in the Battleford area in 1883. As early as 1884, as an entrepreneur, he and a Mr. J.A. Gowanlock erected a combined grist and saw mill at Frog Lake, N.W.T..

This was also the same area that saw the massacre at Frog Lake, in April 1885. In fact, Mr. Gowanlock died in the Frog Lake uprising.

Because of Mr. Laurie's previous military training at the Royal Military College in Kingston, he volunteered his services to General Middleton as a Lieutenant to "F" Company, 90th Winnipeg Rifles. They were soon engaged in the battles at Fish Creek and Batoche. They returned to Battleford and were there on May 26, 1885, when Chief Poundmaker surrendered. They then went to Fort Pitt where Chief Big Bear was captured and this basically terminated the rebellion.

Various articles in the Saskatchewan Herald mention many escapades by Mr. Laurie. One such story relates to his problem when someone stole quite a few of his horses while surveying. There are other notable events found in the paper.

August 18, 1888.
" The span of horses lost by R. C. Laurie on the 27th of June turned up at Medicine Hat the other day, having been delivered to the Mounted Police by a couple of Indians. "

May 2, 1887
"R. C. Laurie, Civil Engineer, has the contract for putting up the bridge across the Battle River. "

Dec. 30, 1898
"R. C. Laurie, Dominion Land Surveyor has closed his office at MacLeod and gone to Regina for the winter. "

Mr. R.C.Laurie depicted in his many writings the early days of Battleford, his early surveys, and stories about the NorthWest Rebellion along with hardships that the early pioneers had to endure on the prairies. One such article was written in 1935, and headlines stated "Reminiscences of Early days in Battleford and with Middleton's Column". This series of articles by Mr. Laurie should be preserved and placed along with other notable issues of early Canada.

Photo shows Mr. R.C.Laurie "throwing the chain". This is how one had to roll up a 200 or 300 foot chain before we had reels to place them in. I did this when I first started surveying in the late 40's. It was quite a knack to get it right without breaking the chain.

Jack Webb

He took over his fathers newspaper, the ***"Saskatchewan Herald"***, in 1903, when his father, Patrick Gammie Laurie died.

In 1900, Mr. Laurie again volunteered; this time he joined the Strathcona Horse in Winnipeg for service in South Africa as a Major. While overseas he contacted "enteric fever" and after a long illness was invalided home.

When World War I broke out, he again volunteered and went overseas with the First Canadian Contingent returning home in 1918.

While with the North West Territorial Government from 1897 to 1903, he was a District Engineer at MacLeod, Regina and Red Deer. While in Red Deer he was elected as a town councilor for the year 1903. Evidently the house he built on 59th street in Red Deer was used as a "Habitat for Humanity" project a few years ago and is still in good shape.

When Battleford became a town in 1904, Mr. R.C.Laurie became a member of the first council. However, in 1905 he resigned to become the Secretary-Treasurer and Assessor for the town. He held this position until he resigned in April 1907. When the Saskatchewan Land Surveyors Association was formed in 1910 Mr. Laurie became one of the original 17 Dominion Land Surveyors to have their Saskatchewan Land Surveyor's Commissions issued to them on the 9th of May 1910. His Commission was number 012.

It is noted that he again went on council for the years 1910, 1911 and 1913. After returning home from World War I, he again sought leadership in the community and was elected to council in 1920 and 1921.

In later life, Mr. Laurie received honorary positions and tributes for his dedication to many organizations and the community. Some of them are as follows:

- Life Member, Board of Trade, Battleford, 1933.
- Life Member, Saskatchewan Land Surveyors Association, 1931.
- Honorary Member, of the Royal Military College Club.
- Life Member, Saskatchewan Press Association, 1933.

Other interesting details of Mr. Laurie's life taken from Patrick Gammie Lauries ***North West Herald:***

- In 1878 the first public school in the Battleford area was opened. That same year saw the first newspaper published in what would become part of Saskatchewan.
- A few of his early legal surveys consisted of surveying the trail from Battleford to Swift Current in 1904.
- A party under Mr. R.C.Laurie left here (Battleford) on September 23rd, 1882 for the

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BE PREPARED FOR THE SUMMER HEAT

Reprinted from "The Kansas Surveyor. -sections lines ", Kansas Society of Land Surveyors. Number 92. May 2002 (no author listed) (As seen in the Treasure State Surveyor - January, 2005)

Spring, or as much of a spring as we have in Kansas, is here, which means that summer is twenty minutes away. As of this writing, we are in the high 80's and low 90's, and temperatures will get another ten to twenty-five degrees warmer before the summer is out.

Surveyors and others who work outside need to remember that this kind of heat is not just unpleasant it can be dangerous. From 1979 to 1992, there were more than 5,300 heat related deaths in the United States. Hiking up a hill, through the trees, or into a creek bed carrying instrumentation and a tripod is not an easy task, and when the temperatures soar it is even worse. It is necessary to take precautions.

When the temperature of the environment is higher than our body temperature, the body initiates perspiration to cool the skin. When the environmental temperature gets above 95 ° F, most body heat is lost through this process. However, when the humidity exceeds 75%, sweating is much less efficient, as the hot air can be nearly as moist as the skin, and the body can overheat.

Prevention of Heat-Related Illnesses

There are several strategies you can use to avoid suffering from a heat-related illness. If possible, get used to the heat gradually. Field crews are out in the weather every day as the temperature is warming, and therefore will acclimate fairly easily. Those who are usually inside are much more at risk for heat-related problems when they go out into the heat that they are not accustomed to. Try to do the most strenuous jobs earlier in the day when it is cooler. If you suspect that you or a coworker are becoming overheated, do not hesitate to find shade and rest. Cool off!

Stay in the shade whenever possible, and park your vehicle in the shade whenever you can. Wear a hat that shades your face whenever you are in the sun, especially if you have dark hair. Dark colors absorb the heat more than light colors. Wear light-colored, light-weight clothing that fits loosely to allow air to circulate.

Begin drinking water before you go out into the heat. Throughout the day, take water every 20 minutes or so, even if you are not thirsty. Do not wait until you are dehydrated. Keeping your body hydrated is the best way to handle the heat. Occasionally, you should drink a sports drink, diluted with water, that contains sugar and electrolytes. As you sweat, you lose a lot more than water; minerals, salt, electrolytes, and more are lost. If this loss is replaced with water only, the body's systems can get out of balance and lead to heat cramps or heat exhaustion. However, do not drink colas or tea or any other liquid that contains caffeine. Caffeine is a diuretic, and drinks containing it will not only not help you, they can actually make you lose more fluids than you already are.

Even though many people have very little appetite in the heat, you do need to eat. If you do not, the liquids you drink will flush through you more quickly, and much of what you drink will not do you any good. Eat lightly, to avoid stomach cramps or nausea. Fresh fruit is good, and bananas are a must for restoring many electrolytes and minerals.

Heat Related Illnesses

Symptoms of heat-related illness will vary from person to person, and from occurrence to occurrence, but will usually include some or most of the following, and roughly in the order given. First will be heavy perspiration and muscle cramps. This is often the first sign that the person is overheating. The skin may become very red, or pale, and may feel moist and cool. The person may feel lightheaded, develop a headache or become irritable. Pupils may become enlarged. Nausea or vom-

iting may occur. The person can suffer weakness, dizziness and unconsciousness if help is not obtained. Heat Stroke occurs when the body temperature rises above 102 ° F.

Heat Syncope is a sudden onset of unresponsiveness that can usually be corrected by placing the victim flat on the ground or floor.

Heat Cramps are slow, painful muscle cramps and spasms, usually located in the legs and abdomen. These are the muscles that are under the most stress. Cramps occur when fluids are lost by sweating and are replaced only with water.

Heat Exhaustion is one of the most common heat related problems encountered. This results from dehydration and sodium loss due to sweating. Individuals who are dehydrated or under-hydrated before exposure to the heat and those who suffer from hypertension are more prone to fall to heat exhaustion.

Heat Stroke is the least common but most deadly heat related emergency, with approximately a 70 percent mortality rate. Most cases involve the elderly and the disabled, but healthy people in their prime are not immune. In heat stroke, the body's temperature regulating abilities are lost, resulting in an uncompensated rise in body temperature. Heat Stroke is considered present when the skin is hot and the victim has an altered mental status.

Treatment

If you find yourself with someone who is overheating, here are some steps you should take. First, get the victim out of the sun and into the shade. A cool room or air conditioned car is better, if possible. Remove as much unnecessary clothing as possible to facilitate cooling, and restrict movement. Put a cold compress on the neck or armpits. This is especially helpful if the humidity is high. In low humidity, you can spray the victim with cool water and set up a fan. Avoid the use of salt tablets or any form of alcohol. Stop the cooling when a normal mental condition is regained. If the mental process has not been impaired, stop the cooling when the victim is again comfortable. If the heat attack is severe, get the victim to a place where more help is available.

Summer can be a hazardous time, but by remembering to follow a few precautions and use a bit of common sense, it can be a productive and enjoyable season. @

Continued from page 2 - "Letter to the Executive Director"

Government always amends legislation with very little consultation. It is up to the public to follow the Bills before the House. I don't like it but that is how it is done, even in Saskatchewan I think.

The members did pass a motion to amend our Act to allow for the collection of a maximum of $15,000 from a member found guilty of professional misconduct. Our Hearing costs to date run about $8,000 per day without Court appeal.

Have a great day and feel free to consult with me at any time.

Oh, by the way...I still have my model 2 Curta that I bought in 1968 for $275.00 (mint condition with box and instructions).

Fred @

I apologize for any embarrassment or confusion caused by my erroneous interpretation of Past-president Clark's report.

Carl Shiels, Executive Director, SLSA

Continued from page 7 "R.C. Laurie"

purpose of laying out Messr's Oliver and Coleridge's lumber limits on Turtle Lake.

- R.C.Laurie contracted to complete the school building. (Oct, 1905).
- R.C.Laurie on June 24, 1903 resigned as manager of the Presbyterian Church in Red Deer and was praised in the highest terms as a public man and citizen.

It is noted that Mr. Laurie's field notes were submitted to the Chief Surveyors Office in Regina in 1941 and then re-directed to the Saskatchewan Department of Natural Resources.

An unprecedented honour was bestowed on Mr. Laurie when he died. Flags in Battleford were at half mast at the Memorial Park, Town Hall and the Armory.

He was a bachelor – in religion a Presbyterian – in politics a staunch Conservative – holding fast to his ideals in all he did. @

Acknowledgement for this biography:

- *Mr. Mike Waschuk S.L.S., North Battleford*
- *Mr. Don Early from North Battleford who loaned me articles about Mr. Laurie*
- *City of= Red Deer, Alberta*

A CASE FOR BEARING ACCESSORIES

By: I Larry Walter

Reprinted from "The Cornerpost" Vermont Society of Land Surveyors Vol. 34, No. 2. September 2003 (as seen in "The Treasure State Surveyor", January 2005)

Recently, I was contracted to re-establish a lost corner in an existing, rural, wooded subdivision. The survey of record is EDM-based, with bearings referenced to True North. I have retraced this original surveyor's work on other projects, with good results, so was surprised to find that one of the monuments tied to was about 5 feet out of position. I found two, triple-blazed witness trees near the corner, both of which faced my calculated deed position rather than to the current location. What was disconcerting, was that the corner fell in a fairly remote location, with no apparent ground disturbance.

I contacted the original surveyor and secured coordinate and traverse data near the corner in question. I then located the original ground point from which the corner was set and from that, was lucky enough to find the original hole into which the rebar had been driven. The original position was within 0.05 feet of my calculated position. The original witness trees now face where I figured the monument had originally been set.

In order for me to re-establish this corner, my client had to spring for two field visits, plus a couple more hours of computations. This is not even considering phone tag with the prior surveyor to bother him for old field notes and computations. What's wrong with this picture? Admittedly, the blazes on the witness trees were enough to put a question mark over the errant pin position, but had they been further away, this would not have been so evident. If there had been a simple recordation of bearing and distance information to the two witness trees, I would have known immediately that the corner had been tampered with. More importantly, I could have restored it within an acceptable tolerance of the original position in about fifteen minutes time.

Swing ties to bearing objects are easily worth your client's nickel, and have the potential to save gobs of cash and headaches for future land owners. Here are some suggested methods for taking witness trees as well as bearing objects in more urban areas:

Witness Trees.

Once you are practiced, it will take about ten to fifteen minutes on each set of two witness trees, including blazing, scribing and recordation. The recorded bearing to each witness tree or bearing object serves as an aid for fixture location of said corner accessory. The distance measurement is what is critical for future re-establishment or location of the corner monument. Some rules of thumb:

- Only establish witness trees with prior permission from any land owners involved. Obviously, it is preferable to take trees from your client's parcel.
- Use a steel measurement tape to the accessory if it can be held horizontally, and the EDM if the distance or slope is prohibitive.
- Choose tree species which are durable and long lived, with minimal signs of injury or rot.
- The idea is to tie to the center of the base of the tree. This way, should subsequent surveyors only have use of the remains of the stump, the center of said mass will determine the measurement point back to the corner position. With current tree-felling techniques resulting in ever lower stump heights, it is imperative to establish and measure from an aluminum nail driven very low and 'half way' around the side of the tree, as you face the corner.
- If the BT is down hill from the corner, place the side-center nail on the side opposite from the side lean of the tree. This way, while measuring, you can hold a plumb line to the nail without running into the bole.
- Try to keep the interior angle close to 90° when facing the trees from the corner. This way, the most accurate results are obtained when simultaneously pulling the recorded distances from each tree to the corner position.
- All distances are horizontal with bearings referenced to the same datum as your survey. If you want to make it easy for the layman to replicate the bearing use magnetic. If you intend to provide a bearing that will retain its integrity over the decades, reference your survey readings to true or grid north. @

Helicopters and Survey Operations

By William R. (Bill) Brookes

Reprinted from "Geomatica" Volume 58, #4, 2004

I don't believe that anyone who has worked on field operations with helicopters could have read Bill MacLellan's article about the helicopter mishap that took the lives of Andy Yllo and the pilot ["Finding Andy", Geomatica Vol. 58 No.2] and not have had the fleeting thought that "there but for the grace of God..."

The B.C. provincial government first used helicopters for topographical surveying in 1948. The helicopter eliminated the time-consuming, backbreaking climbs on foot that surveyors had previously endured to get their instruments to the tops of mountains. Larger areas could be surveyed in shorter times. The helicopter brought great efficiency to topographical surveying, much like what the satellite in earth orbit did for remote sensing.

Over the years I have spent a fair share of hours in helicopters and it is an experience that I would describe for the most part as simply exhilarating. As well, I can say that I have never had any fear about getting into a helicopter. Most of the flying was on a casual charter basis while doing geodetic astronomy work in the mountains-a short flight here, a short flight there, using whatever helicopter company was based closest to the area of work. In that way each flight was new and unique, not routine, and that was what made it exhilarating.

Then there were those times when I was attached to larger survey parties, establishing astronomical azimuth control for their traversing, and the flights seemed more routine. Sometimes on long flights, warmed by the sunlight pouring through the Plexiglas windscreen, I would doze off, slumped comfortably in the padded seats, with just the low drone of the motor in my ear-protectors. And it was on just such occasions, cruising along at 200 km/h, when something unexpected would occur that would jolt me from my reverie: a bird strike on the windscreen in front of me; a rear door that suddenly popped open in flight; and an auto-rotation when the engine went out. (On that occasion, the student sitting in the middle front seat of the helicopter shifted his weight and accidentally tripped a switch on the instrument panel with his knee.) Those are the times when you suddenly realize where you are and start thinking about the strength of physical forces and just how unforgiving gravity can be.

In the summer of 1968, as a new employee with the federal Topographical Survey Division, I was assigned to my first helicopter-supported field operation - a second-order control project in the mountains of southeastern British Columbia. The field party was establishing vertical and horizontal control points in support of federal gravity and mapping programs. It was here that I gained a healthy respect for the helicopter as an indispensable work tool for survey operations.

During the previous summer I had worked as an assistant on the coordinate control survey of the City of Vancouver for Topo Survey, and I remembered the party chief, the late Ralph McDowell, telling us students around the supper table in the cook trailer about his days on horse parties and the rigours of surveying in the mountains. (One particular story lingers about how he had to use an axe to put down a horse when it broke its leg, because he had no rifle at the time.) While I recalled that the stories were fascinating, I was thankful that I was now working with helicopters and not horses.

Traversing with Wild T2 theodolites and MRA-3 Tellurometers was the method of establishing control on this project. The party was organized into two 2-man traversing crews, each with a helicopter - the Bell model 47G-3B, which looks like those machines with the side racks from the TV series "M*A*S*H".

The traversing progressed in a leapfrog manner, with the helicopter moving the rear surveyor ahead of the front man once the distance between them had been measured. Before moving, the rear man erected a wooden signal over the station to serve as a backsight for the man ahead. This signal was constructed from a five-foot length of "2 x 2" with a 16 by 19 inch piece of quarter-inch plywood nailed to the top. The centre of the plywood was cut out and covered with fluorescent orange cloth. The signal was supported by two "1 x 2" braces and held in place by rocks.

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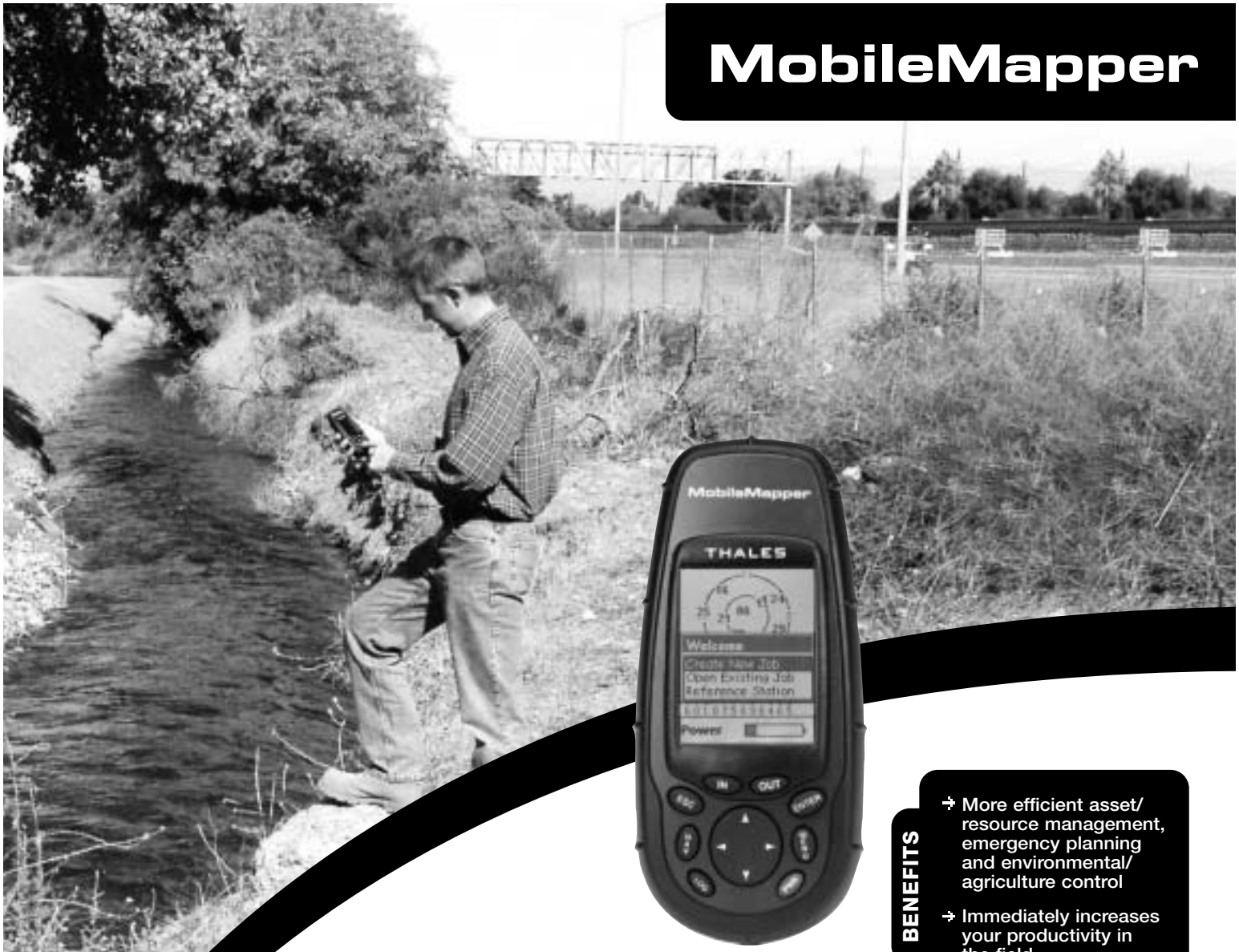

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THALES NAVIGATION

It was early one afternoon with the winds starting to build as the helicopter carefully approached my next survey site, a small clearing on a narrow rocky ridge. The machine was a couple of metres above the ground when quite unexpectedly a bear cub ran across the clearing directly below us. A mother grizzly quickly followed, charging into the clearing and then rising on her haunches to a standing position with her forepaws slashing menacingly at the helicopter. Arno, the pilot, reacted quickly, lifting the chopper backward, upward and then diving forward over the ridge.

While landing in winds on a narrow ridge the helicopter is in a very vulnerable state. The pilot must call upon all his skills to maintain a fine balance and controlled, slow descent. It would have taken only one swat of the bear's paw to the helicopter's skid gear to upset that fine balance and send the machine crashing to the ground. With grizzly bears around, the survey site was no place that we cared to be, so the pilot decided to refuel the machine. By the time we would find the gas cache, fuel up and return, the bear and its cub would probably be long gone and we could finish the intended work.

But finding the gas cache proved to be more trouble than we had bargained for. We flew to the location marked on the map where the gas was supposed to be cached in a little valley. There was no sign of the fuel drums. We flew around the valley and still found no drums. The area is covered with many little valleys separated by ridges. The crew member who had cached the gas a few days before must have marked incorrectly the location on the map. Now what do we do - do we try the next valley to the east, or the one to the west? Murphy's Law: the one we chose was the wrong one. By this time Arno was getting a bit ticked with the guy who cached the gas. When we finally did find the drums in another valley, the fuel gauge was well below the comfort line where you want to be when you refuel.

Arno set the helicopter down beside the barrels and shut down the engine. We took out our thermoses and had a cup of coffee, sitting against the side rack to which the survey gear was secured, while we waited for the engine to cool down. The exposed, twin fuel tanks on the Bell 47-G are mounted high on the machine, one on each side of the engine, just aft of the "bubble". To avoid a possible fire from spilt fuel you wait until the engine cools down. It was while leaning against the rack that we noticed that one of the plywood backsight signals was missing. It had been tied down with rope to the rack with the rest of the gear earlier in the day. Somewhere in flight it must have worked its way lose and fell from the rack.

The thought struck us both that we were very lucky that the airborne signal did not go straight back into the tail rotor. As we sat there pondering this, there was a small, but audible, metallic "ping" noise behind us. Arno turned around and discovered that a clamp securing one of the many pipes and hoses that sprout from the engine had, at that exact instant with us standing there, fractured from metal fatigue. Had that happened at another time and gone unnoticed, the pipe that the clamp was meant to secure may have started vibrating and caused who knows what further damage.

It was all too much for us for one day - a close encounter with a bear; almost running out of fuel; the airborne survey signal; and now the broken clamp. We secured the pipe temporarily with some wire, refueled, and flew back to pick up my sur-

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Fractional Sections

By Lyall Pratt, ALS

Reprinted from "ALS News", December, 2004

Over the past few years, I have been asked several questions about fractional sections, often by articling pupils who have run across an exam question dealing with the issue. The intent of this article is to provide a bit of information on the Alberta system of survey and discuss what a fractional township, fractional section, fractional quarter section or fractional legal subdivision is.

The Dominion Land Survey in Alberta

Most of Alberta was surveyed under the third system of survey in the Dominion Land Survey. The first baseline in the third system of survey is the international boundary (Canada/United States border). The Alberta portion of this boundary was monumented in 1873 and 1874. Also in 1874, a "special survey" was created to project the basic framework of meridians and baselines westward from the initial or primary meridian. The first point on the fourth meridian (the Alberta-Saskatchewan border since 1905) was established in 1878 by the "special survey." Part of the fourth meridian and the fourteenth baseline in what is now Alberta was then surveyed in 1879.

The Third System of Survey

The third system of survey was introduced in 1881 and a new Manual of Survey was issued. The ALSA library has a copy of this 1881 Manual. The portions of Alberta surveyed before then were re-surveyed to conform to the third system of survey. All future township subdivision surveys in the province were based on the third system of survey. In 1881, blocks of 16 townships were surveyed adjacent to the preceding block of townships. Starting in 1882, the method of surveying baselines from one meridian through to the next meridian was implemented. Townships were then surveyed from the baselines and by surveying connections between the baselines. The baselines first method was used from then on in township subdivision surveys.

In the third system of survey, townships are 486 chains in an east-west direction along the baseline and 483 chains in a north-south direction. Spelled out in the Manual and even today in Section 21 of the Surveys Act, "The lines bounding townships on the east and west sides are meridians and on the north and south sides are chords to parallels of latitude. " Due to convergence, ranges north of a base line are slightly less than 486 chains and ranges south of a baseline are slightly larger than 486 chains. It follows then that the length of any baseline north of the first baseline is shorter between the same reference meridians. For example, the distance between the fourth and fifth meridians along the first baseline (international boundary) is approximately 182 miles while the distance between the same two meridians at the 60th parallel (north boundary of Alberta) is only about 139 miles. While correction lines allow the basic layout of townships to remain a similar size, the jog along the correction line increases the further west of the initial meridian a range is. This results in the last range east of a primary meridian being less than full width. This fractional range creates fractional townships along the east side of each reference meridian.

Fractional Townships in Alberta

The eighth edition of the Manual of Instructions for the Survey of Dominion Lands printed in 1913 defined a fractional quarter section as follows: "A quarter section is fractional when it is broken by lakes or streams which have been traversed or by parcels of land previously laid out." Township surveys abutting previously surveyed Indian Reserves and other official surveys would create fractional quarter sections where the surveys met. While this makes many quarter sections fractional in the Survey of Dominion Lands, it is the fractional ranges created by the system of survey itself that we most often think of when discussing fractional townships. These fractional townships are created when closing onto a reference meridian and where survey systems change such as junctions of the third system with the first and second systems of survey. Since Alberta has no such junctions, this article will primarily discuss the fractional townships that occur when closing onto a reference meridian. These fractional townships occur immediately east of a meridian, so in Alberta we have fractional townships to the east of the fifth merid-

ian, and the sixth meridian. Of course fractional townships east of the fourth meridian all lie within Saskatchewan. We also have less than full townships in Alberta on the east side of the Alberta-British Columbia border and on the south side of the Alberta-Northwest Territories border. These less than full townships occur only because a full township would not fall fully within provincial boundaries, and have more to do with the location of the boundaries than the actual survey system. Theoretically extending the township fabric west of the Alberta-British Columbia border to the seventh meridian would create fractional townships abutting and east of the seventh meridian which lies wholly within British Columbia. In reality, with a few exceptions, the western limit of the third system of survey follows the boundary between the provinces of Alberta and British Columbia. There are no fractional ranges or townships created at the junction of the third and fourth systems of survey because the township outlines have the same dimensions. While part of the Peace River block of British Columbia was surveyed under the third system, the fourth system is also used in British Columbia. The survey of part of the 120th meridian portion of the Alberta-British Columbia boundary between 1918 and 1924 had intersected nine previously surveyed baselines (16th to 24th inclusive). The survey of the remainder of the Alberta-British Columbia boundary was completed in the 1950 to 1953 survey.

So there are also fractional townships along the western and northern boundaries of the province. For the most part, the fractional townships along the north boundary would be theoretical fractional townships as the fourth, fifth, and sixth meridians and the Alberta-British Columbia border are the only surveyed section lines extending to the north boundary of the province. An examination of the plan of survey for the sixth meridian shows 15.2059 chains between the NE corner of Section 36, Twp. 126-126th and monument number 313 on the Alberta-Northwest Territories boundary based on the 1951 survey of the boundary.

In the tenth edition of the Manual of Instructions for the Survey of Dominion Lands printed in 1946, several possible correction line scenarios are covered in detail under the field work sections in clause 122 to clause 126 inclusive. This tenth edition was excerpted into the Manual of Instructions for the Survey of Canada Lands published in 1962 as an appendix.

Within a fractional township, the sections abutting the meridian are fractional, the quarter sections abutting the meridian are fractional, and the legal subdivisions abutting the meridian are fractional. The principle is that as long as a whole unit (section, quarter section, or legal subdivision) fits the unit remains whole and any remainder becomes the fractional part of the next adjacent unit. This would mean that in a fractional quarter section containing say 100 acres, you would have two complete legal subdivisions and two fractional legal subdivisions.

In Unsurveyed Territory

The most common situation run across in unsurveyed territory is the requirement to survey a wellsite within a fractional township, fractional section, fractional quarter section or even within a fractional legal subdivision. As in any other unsurveyed territory computations, the framework used is the baseline survey and the theoretical section framework based on the Supplement to the Manual of Instructions for the Survey of Canada Lands (blue book). The baseline is of course tied to the reference meridian and it then becomes a computation exercise to determine the size of the theoretic fractional units east of the reference meridian and the location of the well relative to these theoretic section limits.

Total coordinates for the well are referred to the NE 33 on the baseline even though the theoretical NE of 33 may in some instances actually fall west of the reference meridian. From a computational perspective, you simply project the baseline west of the reference meridian to the theoretical NE 33 and then mathematically construct the required section framework.

In Surveyed Territory

The only real issue in surveyed fractional sections abutting a reference meridian is how to establish the N $^{1/4}$ on a blind line, or how to establish a legal subdivision corner within a fractional quarter section. Obviously you can not split the blind line to establish the N $^{1/4}$, so you must lay out the theoretic quarter section width along the blind line taken from the blue book. If the corner of a legal subdivision in a fractional quarter section is required, then Section 26 of the Surveys Act and the blue book are both used to establish the required corners.

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Bill C-45 - Revisions to the Criminal Code of Canada

By Larry Pals, ALS

Reprinted from "ALS News", December 2004

In 2003, the Government of Canada revised the Criminal Code of Canada under Bill C-45. The Code now states, and I quote, "everyone who undertakes or has the authority, to direct how another person does work or performs a task is under a legal duty to take reasonable steps to prevent bodily harm to that person, or any other person, arising from that work or task." If found guilty, there can be fines as high as $100,000 or even jail time based on the severity of the situation.

The new Alberta Occupational Health and Safety Code Part 32 defines what a ground disturbance is and what steps must be taken if you are performing a ground disturbance. Is the placing of an iron post or the digging of a hole looking for an iron post or rust hole a ground disturbance? I believe that in the eyes of the court and based on the current code that this action is indeed a ground disturbance. What action do we have to carry out prior to pounding a survey post or digging a hole looking for one?

In my opinion, first we should contact Alberta One Call to locate any facilities in the area where we are working. We should utilize any asbuilt or proposed drawings that may show the location of any existing or proposed buried facilities in our immediate work area. We need to educate our field crews to look for any visible signs which may lead them to believe that there may be something buried which may conflict with their work. It is my observation that once you have taken these steps you may then be able to defend yourself under the Criminal Code should something serious happen. You may not have a leg to stand on if you do not. The law firm of Miller Thomson will make a presentation on this subject at the Edmonton and Calgary regional meetings in January.

Some further sobering thoughts for those involved in the housing and construction industry. There is no requirement for any as-builts for service lines from the service main to any buildings. Therefore before placing your reference marks for any proposed building or structure, should you have the services for adjacent lots located? My understanding is that these services can be as shallow as a few inches under the surface.

I think the question we should ask ourselves is "have I taken reasonable steps to prevent bodily harm to myself, my staff or anyone else who could be injured by my work?" I know the Standards Committee is currently reviewing work done to date on this issue and I urge anyone who may have some comments or observations on this issue to direct them to Standards.

Thank you for considering my ramblings and I hope this gets everyone thinking. I believe it is our responsibility to ensure that each and every one of our staff returns home safely everyday. I wish everyone a safe and happy holiday season. Merry Christmas and Happy New Year. @

Continued from page 17- "Fractional Sections"

Misconceptions

Townships are not considered fractional just because, by survey, they are smaller than their theoretic values. So for instance a quarter section adjacent to a correction line that measures north-south less than theoretic is not fractional unless it abuts a reference meridian. Similarly, a quarter section that measures shorter than plan distance would also not be fractional just because it contains less than 160 acres.

While the definition from the eighth edition of the Manual of Instructions for the Survey of Dominion Lands says that quarter sections broken by lakes or streams are fractional, I think it is much easier to only think of fractional units (townships, sections, quarter sections or legal subdivisions) as being created when they abut on previously surveyed parcels. @

Continuing Professional Development in New Zealand

By Mele Rakai, Associate Member and John Baldwin, University of Otago, New Zealand

Reprinted from "ALS News", December 2004

As Ken Allred noted in the June 2004 issue of ALS News, land surveyors in Canada are a part of an aging profession in an active, competitive marketplace, where it is becoming increasingly difficult to obtain and retain good qualified staff. It is, therefore, important that we ensure that current members as well as incoming members-including graduates of our learning institutions -are continuously encouraged and given opportunities to keep abreast of the various changes (e.g. technological, social, legal, legislative) that affect the surveying profession.

In many professional surveying organizations, a committee such as the Professional Development Committee (PDC) in Alberta, or the Continuing Professional Development (CPD) committee in New Zealand, has been established to facilitate the process of keeping members continuously educated in order to be kept up to date with the winds of change affecting their profession. This article provides a quick overview of the development of the CPD program in New Zealand, by the New Zealand Institute of Surveyors (NZIS).

The CPD Program in New Zealand

Since introducing its voluntary CPD program about a decade ago, the NZIS has been encouraging members to be actively involved with CPD. As expected, questions have been raised over its definition: is it 'continuing personal development' or 'continuing professional development' or even 'compulsory professional development'? The NZIS responded by taking the approach that CPD embraces both personal and professional development.

Initially, CPD activities were classified into 3 categories that included extra-curricular activities such as community service and even survey practice.

Initially, CPD activities were classified into 3 categories that included extra-curricular activities such as community service and even survey practice. This was aimed at recognizing that continuing proven competence in surveying activities was relevant. Generally, members were (and are still) required to log 20 hours or points per year. In 2003, the NZIS recommended that points or hours be scored in only one category-a category that emphasizes participating in professional surveying activities such as branch meetings, seminar and conferences. To this effect, the CPD Committee developed a points system for participating in events such as meetings, workshops, seminars and conferences. These events generally have a maximum value of six points. However, the points do not necessarily equate to the number of hours used - for instance, higher points may be awarded for a particularly valuable seminar. Furthermore, since some of the smaller branches meet infrequently, the percentage of a meeting attended, out of the overall number of meetings held may be used. Members are also encouraged to undertake additional studies, with a limit being placed on the points that may be claimed-such as ten points for a university course.

The active encouragement of members to attend CPD sessions places a responsibility on the NZIS to organize appropriate educational sessions, such as those dealing with new software, cadastral procedures or subdivision engineering. Consequently, a conference (three to five days), a local government seminar (two days) and a consultants workshop (two days) are organized annually by the NZIS. Local branches of the NZIS are also encouraged to include relevant topics and speakers in their regular meetings. There have also been many briefings, seminars and training sessions over the decade, with the development of New Zealand's national LIS program, including over the past few years, its eSurveys and Landoline initiatives. [eSurveys may be seen as the equivalent to Alberta's digital plan lodgement process, while Landoline may be seen as the equivalent to Alberta's SPIN system.]

Issues and Recent Innovations

A contentious issue has been the need for compulsory or mandatory CPD. Some members, particu-

larly older members and/or those residing in remote areas, have objected to the introduction of compulsory CPD, due to the difficulty of travelling to seminars and workshops in order to obtain their CPD points. They argued that while attending seminars and workshops was not a problem for members residing near or in the main centres, it was difficult for those residing in remote locations. They also pointed out that some consideration needed to be given to allowing such members to keep abreast of new developments and issues by reading surveying-related material.

To date, achieving adequate CPD points has not affected a member's right to gain and retain a license to practice as a cadastral surveyor. However, it should be noted that in keeping with recent professional and legislative reforms in New Zealand, the legal title of Registered Surveyor, has been replaced with that of Licensed Cadastral Surveyor. In addition, the past practice of Registered Surveyors renewing their Annual Practicing Certificate yearly, has now been replaced with the need for Licensed Cadastral Surveyors to renew their license every three years. As yet, there is no mandatory requirement for New Zealand surveyors to have a CPD portfolio. However, given the many changes in laws and procedures affecting cadastral surveying, surveyors are doing many hours of CPD (which may or not be logged), in order to be able to practice effectively as a cadastral surveyor. The renewal of a cadastral license will have a requirement to have recently completed a number of official cadastral surveys. Thus, CPD may be compulsory for licensed cadastral surveyors, but will remain voluntary for other categories of surveyors.

To date, achieving adequate CPD points has not affected a member's right to gain and retain a license to practice as a cadastral surveyor.

Creating compulsory CPD brings with it the need to police members' CPD returns. With around 1,000 members to submit returns, careful monitoring of paper records can be a major logistical undertaking for a small voluntary organization. For instance, a few reams of inadequately completed forms may require validation. In response to these issues, the NZIS CPD website was revamped in early 2002, to make it easier to access professional information, relevant reading materials and make site searches that could facilitate professional learning. Also included within the site was a facility for members to log their CPD performances. This part of the site lets members select their CPD activity, claim their CPD points and, if they wish, provide a brief explanation of the activity. The record cannot be lost like a paper record, and is available on any internet connected computer. The paperwork for CPD administrators is also substantially reduced. A CPD administrator is able to download every CPD record and save it as an excel or similar spreadsheet file. It is envisaged that the CPD record can be used by a member as defense against any accusations of not being up to date. Alternatively in a disciplinary action, the NZIS is able to refer to the last three years of a member's activities.

CPD Benefits Realized To Date

CPD has been introduced gradually by the NZIS over the last decade. Members who have embraced it have expressed the opinion that it is not a major chore, but simply one of remembering to record one's CPD activities. Their experience has helped convince more of their colleagues that it is not a burdensome program. One benefit of the newly created online CPD recording system is that it allows members to keep a record and/or even a diary, of every relevant activity as desired. Although members are required to record only 20 to 25 hours per year, some conscientious members have been logging well over 100 hours each year and seem to delight in adding to their score sheet. They are persuading and instructing their colleagues about how easy and quickly a creditable record can be built up. @

For more information on the NZIS CPD program, you can check out www.surveyors.org.nz. You are also welcome to try out New Zealand's online CPD recording program, by becoming temporary NZIS website members - contact John Baldwin (john.baldwin@otago.ac.nz) if interested.

Note:

The Professional Development Committee had the pleasure of meeting with John Baldwin, long time member of the New Zealand Institute of Surveyors (NZIS), and senior lecturer at the University of Otago's School of Surveying in Dunedin, New Zealand, in September 2003.

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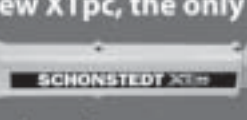

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The Initial Points of Michigan

by Joseph T. Stuart Copywrite © 2004

From "Turning The Horizon" Volume 3, issue 1, 2004

In order to measure anything, one must have standards. "This stretch of road is one mile long." But what is a mile? "A mile is 320 rods." And what is a "rod"? What is its standard? The English units of measurement, from whence come the American units, were often variable during the Middle Ages and later. In the sixteenth century, a rod was defined as a "length of exactly 16 ... shoes" from "sixteen men, short and tall, one after the other, as they came out of church:" This humorous definition of the rod communicates a key point: in all measurement, standards must be present. With Edmund Gunter's seventeenth-century invention of the chain (four rods, or sixty-six feet), precise measurement of land and its subsequent status as a market commodity became possible.

The impact of new land measurement standards on America swiftly made itself felt. The confusion of land titles, boundaries, and variable units in colonial America impeded development to the West. As more and more colonists sought land for themselves, the United States congress had to move swiftly: in 1785 and again in 1796, Congress passed acts providing for the survey (with Gunter's chain) and then sale of the lands of the Northwest Territories (the public lands north and west of the Ohio River). The states of the Eastern Seaboard had ceded any claims to these lands to the federal government for the payment of debts generated by the Revolutionary War. The Congressional acts established a system whereby territory given up by the Indians would be divided into square townships. These townships would include thirty-six square sections, one mile, or eighty chains, on each side (each section enclosing 640 acres).

Despite Gunter's chain, the early surveyors of the Midwest needed survey reference points, precise locations that would orient and order the surrounding townships. This necessitated establishing initial points of survey. From these points would run a north-south meridian line and an east-west base line. Townships were to be designated by their position east or west of that particular meridian (called the range) and north or south of the standard base line (called the town). The principle meridian and the base line would intersect at an initial point. This system would form a grid, oriented by the cardinal points of the compass, of square tracts of land.

Thus, the first step in commencing the tremendous task of surveying the United States was to establish the first initial point. The location of initial points is mainly a question of convenience, such as a conspicuous location near to the land to be surveyed. Not far from the town of East Liverpool on the Ohio River is a plaque that reads: "The Point of Beginning." It continues: °1112 feet south of this spot was the point of beginning for surveying the public lands of the United States. There on September 30, 1785, Thomas Hutchins, first Geographer of the United States, began the Geographer's Line of the Seven Ranges." The "Seven Ranges" of Ohio land became the first area surveyed by the General Land Office (GLO) system of surveying that spread out across millions of square miles of North America.

Eventually, surveyors established about thirty initial points across the country to serve as a giant reference network of meridians and base lines. However, early instructions to surveyors said very little about running meridians or base lines. It was not until the Manual of 1894 that the current classification of surveying "lines" solidified into 1.) base lines, 2.) principle meridians, 3.) township exterior lines, and 4.) township interior and meander lines. Though little was said about initial points in the surveying literature of the time, the meridian and base lines were carefully surveyed. At least, they usually were, for in Michigan erroneous surveys resulted in a peculiar feature: two initial points.

On October 12, 1815, Benjamin Hough wrote to the Surveyor General (Edward Tiffin): "We arrived at Fort Defiance [northern Ohio] ...and obtained a very satisfactory observation of the polar star ... and also when on the Meridian, two nights in succession, and found from each observation (both exactly agreeing), that the variation of the compass at that place, was 4° 39' East, and by that variation ran the meridian line:' Hough's line became the principle meridian of Michigan. A contract had already been signed in April of that year for the surveying of the Michigan base line.

Hough proceeded northward (true north) through rough country. In his letter of October 12 he wrote that, "I found thus far, exceeding bad ground to run lines over, being very thick of underbrush, and in many places swamps for a great distance, almost impassible:' At last he was able to set an initial point for the base line west, near to the present intersection of the Ingham and Jackson County lines in south-eastern Michigan. Either Hough or Alexander Holmes tried to run the base line east, but ran into lakes and much difficulty. So, the surveyors went south of the initial point (between towns 2 and 3 S.) in an attempt to get around the lakes, heading east. They then proceeded north to intersect the theoretical base line between ranges 5 and 6 E. They extended the base line west to ranges 4 and 5 E., but soon sickness prevented any more work that year.

In 1816 Joseph Fletcher contracted to continue Holmes'/Hough's work and survey the base line east all the way to Lake St. Clair. Fletcher's gross errors resulted in the rejection of his work, so Alexander Holmes completed the base line east from between ranges 4 and 5 E. to the lake (1816). The east base line still did not intersect with the principle meridian, however.

Joseph Wampler resurveyed the base line east in 1824. He began at Holmes'/Hough's line at ranges 4 and 5 E. and proceeded west until he intersected the principle meridian. But the intersection was 14.18 chains (938.8 feet) north of the initial point for the base line west! Billy Buckler writes that somehow Holmes/Hough had made substantial errors when trying to detour around the lakes in 1815, a seventy-two mile route over rough terrain. Wampler set his intersection point anyway as a second initial point. He found it necessary to hold the second point "in order to tie in the survey of the lands already laid out east of the meridian."

Michigan is the only state to have such unique pair of initial points. Buckler declares that they do not cause any problems since townships are numbered as either north/south or east/west of the base lines and meridian. They are not referenced to the initial points themselves.

Between 1825 and 1835 the surveying of Michigan slowed down due to federal funds going to Ohio and Indiana where large numbers of immigrants were settling. By 1836 the surveying of Michigan had resumed with full intensity. The surveyors often worked in very harsh conditions, but within four years most of the Lower Peninsula and the eastern part of the Upper Peninsula where surveyed. However, with the discovery of gross errors and fraud, much work had to be repeated. Eventually, once the township lines were set, section lines were run. By 1851 Michigan was largely surveyed.

In Michigan, harsh conditions and errors lead to the establishment of two initial points. Despite this irregularity, the survey of Michigan was successfully completed. Standards are always necessary for measurement, and for the GLO system of surveying in the United States, a network of initial points and base and meridian lines have served faithfully until today as the standards for surveying land. @

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Concepts of Land Ownership in Early Michigan History

by Joseph T. Stuart (North American Survey History Scholarship Winner)

Reprinted from "Turning Horizons" Volume 3, Issue 1, 2004

On June 11, 1805, fire broke out in Detroit, Michigan, and gutted much of the village. The two-acre hamlet of narrow streets and lanes suffered devastation just weeks before the new territorial governor, William Hull, arrived. When Hull and other governmental leaders arrived in frontier Detroit, they faced a serious problem: who owned the land now that fire had destroyed many of the buildings? With only "squatter's rights" and no clear claims to title, who should gain possession of the commons (public) land, for example, as both the government and various citizens eyed the same property? Why did no clear title exist in Detroit after the fire of 1805? After all, Detroit pre-dated Philadelphia by only fifteen years, yet in that Pennsylvania city land ownership could be determined easily and exactly. This article attempts to investigate the ways in which the new government of Michigan dealt with the problems associated with these early land claims. I hope to show that the confusion in Detroit after the 1805 fire resulted from different concepts of land ownership present in early Michigan history. One of these was French and essentially feudalistic, and the other, germinating in Britain, blossomed into full maturity in the British North American colonies that declared independence in 1776. The Anglo-American concept of land ownership shaped American identity profoundly; by 1805 this concept had systematized itself into a pattern of land surveying that maintains itself to this day, reinforcing our contemporary understanding of fee simple land ownership (complete individual control) of a particular tract of land with precisely measured boundaries. As used in this article, the concept of land ownership refers to two principles: 1.) the right of ownership, and 2.) the practice of ownership (physical layout of the claim).

Perhaps the first question that bothers the curious reader is: what did the French have to do with Michigan? Many governments have claimed the lands between the great lakes of Huron and Michigan: Spain, France, Britain, Maryland, Virginia, New York, Connecticut, and finally the United States. The French held possession of Michigan from about 1610-1763, when the French and Indian War ended and the lands transferred to the British victors. During most of the seventeenth and eighteenth centuries, only French fur traders and Jesuit missionaries knew anything about the land. By the 1640s priests worked for souls in the vicinity of Sault de Ste. Marie in northern Upper Peninsula Michigan, establishing a mission twenty years later that then turned into the oldest permanently occupied settlement in Michigan. Though the French were also active around Fort Michilimackinac (near today's popular tourist destination, Mackinac Island), it was further south that the more substantial French land claims lay. In 1692 La Mothe Cadillac took command of Fort Michilimackinac; from this vantage point he examined the problems of the French fur trade and concluded that this business could best be controlled and increased from the area now called Detroit. Cadillac's interest was not only that of the man of money; he was a rare human being on the frontier, of curiosity and imagination, who took interest in the Indians and the land in themselves. Thus, he it was who worked to change the French assessment of Michigan as a place to exploit, to seeing it as a place to live. So he brought fifty soldiers, fifty traders and artisans, and two priests from Montreal and settled at Detroit (meaning "the Strait", i.e., between the lakes of Erie and Huron) in 1701.

Besides traders and military commanders such as Cadillac, Jesuits priests and missionaries to the Indians played major roles in the territory governed by France in the New World. They sent many letters back to France recording their activities called the Jesuit Relations, and in 1735 a certain Fr. Nau described the land around Detroit (at that time part of Canada) in one of these letters:

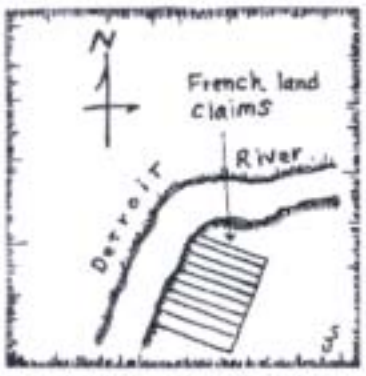
> *"Detroit, at the forty-second degree of Latitude, is situated between Lake Huron, and Lake Erie. This stretch of country is the Finest in Canada; there is scarcely any winter, and all kinds of fruit grow there as well as they do in france. There is question of Building a town there. Seventy French fami-*

lies are already on the spot, and there is a fort and garrison of which the reverend recollect fathers are chaplains."

Though the fruitful land in the Detroit area could support the work of agriculturalists, the French failed to build up enough colonists to hold on to the land for long. Indeed, one governor-general, Gallissoniere, said in 1750 of Detroit that, "Did it once contain a farming population of a thousand, it would feed and defend all the rest [i.e., Canada]." It was inevitable that the French should lose Detroit, and indeed all of their lands, for even Cadillac's efforts could not change the basic motive of the French government for administering its New World holdings: to enrich France, not establish a successful colony. Thus, at the end of the French and Indian War in 1763, the British (who were much more oriented toward building up prosperous colonies) took over Detroit, though the village maintained its French heritage for generations.

Part of this heritage was the French concept of land ownership that consisted of two parts: 1.) the right of ownership; how did the French claim or own land? On whose rights did ownership rest? and 2.) the practice of ownership; once established, how were the boundaries of the claim measured? How was the claim organized, and for what purpose?

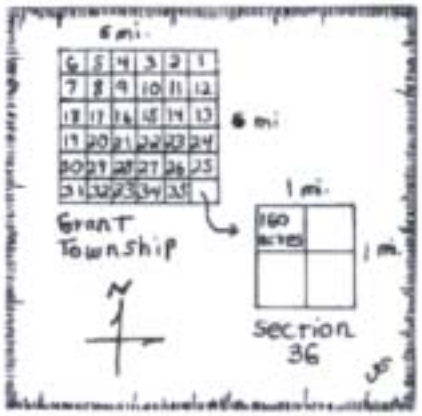
French ownership in the New World rested on the "right of discovery;" explorers and tough businessmen established a long line of trading posts reaching from Quebec, along the winding course of the Great Lakes, down the banks of the Mississippi River. The governors of these posts could grant title to land to anyone interested, but the French king had to confirm it. With this major bureaucratic hurdle in place, many French traders made little effort to secure complete title.



Author D. B. Reynolds thinks an even more important characteristic of the French land claims was that complete ownership did not transfer to Frenchmen in the New World. This was because the land grants were "concessions made under a modified feudalistic concept of rights in property, and possessors were, in fact, little more than tenants, paying tribute to the real owner-the king.'

Indeed, in the feudal world, land ownership meant the exchange of rights and services between an overlord and those under him. Land was valued and measured with the flexible standards of its ability to produce and support human life. For example, in feudal England, the acre was a variable unit: larger in area for poorer land and smaller for better land because the primary concern was the number of people the acre of land could feed. Thus, in the French, feudalistic system, complete title to land was not passed, and no rigid standard for land measurement existed.

The particular way that this concept of land ownership worked itself into the fabric of life in the New World also drew from traditional roots. The farms in the Detroit area, and in all of New France, often involved an area of two to six arpents (an arpent, though slightly variable, in this case equaled about 192.2 square feet-nearly an acre) of river frontage by forty arpents deep, proceeding at a right angle to the river. This long and narrow shape of the farms, oriented perpendicular to water courses, gave them the appearance of "ribbons"-thus, they are known as "ribbon farms" today. These long, narrow strips of land assured each settler at least a small amount of river frontage (the only routes of transportation at the time). The design also brought people close together for defensive and social purposes (the French were known for having a good time together). The lanes that developed between these elongated and erratically-oriented farms later served as streets in the growing city of Detroit, such as Beaubien, St. Antoine, and Chene, which explains the awkward layout of such routes today. The French land organization can still



be seen in the ribbon or quilt-like pattern of the land in Wayne and Monroe counties.

After the 1805 fire in Detroit, a new concept of land ownership entered Michigan. For centuries it had evolved in England due to many forces, including the enclosure and personal use by nobles of former lands of the Catholic Church after the Reformation, and the development of standards for measuring land, such as Edmund Gunter's chain. In America, a growing sense of the right to individual possession of property over monarchic control grew among the British colonists. Attraction to the land beyond the Appalachian Mountains only exacerbated a tension that eventually erupted into war between Britain and the colonists, leading to the independence for the latter. The ideal of personal land ownership culminated in the Founding Father Thomas Jefferson, who passionately held to the civic virtues of land ownership and his own beloved estate of Monticello. This concept of land ownership also sprang from the growing standardization of measurement with chains. Land came to be seen as an exact quantity, capable of producing a certain amount of rent; land became a market commodity itself, with its own price tag. Absolute (or, today, called fee simple) ownership became a central tenet of the justification for the War of Independence; it greatly contrasted with older, feudal concepts of property in the French-controlled territories of the New World.

The confusion of land titles and boundaries in colonial America, and the inability to have land surveys done cheaply and quickly, all impeded development to the West. As more and more colonists sought land for themselves, the United States Congress had to move swiftly: in 1785 and again in 1796, Congress passed acts providing for the survey and then sale of the lands of the Northwest Territories. The states of the Eastern Seaboard had ceded any claims to these lands to the federal government for the payment of debts generated by the Revolutionary War. The Congressional acts established a system whereby territory given up by the Indians would be

divided into square townships. These townships would include thirty-six square sections, one mile on each side (each section enclosing six hundred and forty acres). Townships were to be designated by their position east or west of a particular meridian, and north or south of a standard base line. This system would form a grid, oriented north and south, of square tracts of land.

This Public Land Survey (PLS) system, as it came to be called, worked well as a method of organization, but it did receive criticism. For example, the grid-system did not allocate land for roads. Transportation naturally developed along section lines, true, but this only added to the problem of human isolation. Homesteaders often built their homes at the center of their claims, which led to great distances-often at least a mile-between neighbors. They had to travel out to the section line from their own home, along the section line, and then into another section of land to visit a friend. E. V. Smalley, writing in the Atlantic Monthly, wrote in 1893 that, "Each family must live mainly by itself, and life, shut up in the little wooden farmhouses, cannot well be very cheerful .... An alarming amount of insanity occurs in the new prairie states among farmers and their wives." The early French farmers of Detroit probably would have heartily agreed with this concern, while sipping a glass of wine on a neighbor's nearby front porch.

By 1805 the PLS system had begun to trace itself onto the landscape of the Midwest as it still lies today. Though most of the wilds of Michigan did not feel the footsteps of the surveyors until the 1830s to '50s, the system quickly had to contend with the early French farms in south-east Michigan, as well as the land claims in the Detroit area after the fire. How were they incorporated into the grid system?

Before enacting the legislation creating the PLS, the Continental Congress met in 1784 to deal with the question of prior land claims in America. The proposed legislation included the principle that any early rights or prior valid claims would be honored. This was the philosophy that later informed the decisions made on the early French claims around

Detroit. Several grants by the French King to Cadillac were recognized, as well as the many farms along the Detroit and Raisin rivers that had been surveyed with French methods, integrating their elongated shapes into the growing grid pattern. Thus, the grid was laid out around the French claims, leaving them intact. Even today, the biggest tangle of roads in the city of Detroit occurs where the two systems came together: from the Grand River, Livernois Street's alignment is French (i.e., proceeding perpendicular from the river, or roughly north-west) until it crosses Tireman Street, where it enters into the PLS system and orients due north and south.

In conclusion, the unique status of the ribbon farms of south-eastern Michigan, and the confusion surrounding the French claims in Detroit after the fire of 1805, rested on fundamentally different concepts of land ownership. The French did not often posses clear title; they saw land ownership in terms of the exchange of rights and services, a relationship between overlord and tenants. They also organized their lands in ways that took into consideration the needs for transportation and social life on a wild and lonely frontier. With the loss of French possessions in the New World, the French system would yield to Anglo-American ideas about ownership and land surveying. The Americans defined land ownership in terms of private property and developed a grid system that quickly and cheaply (though not without its faults) made land available in the West and helped define their own identity. In Detroit, Michigan, these two systems came together, leaving a pattern that one can still see today. @

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Did You Know That North -is Moving to Russia?

Reprinted from the Maryland Surveyor (Publication of the Maryland Society of Surveyors) Volume 29, Number 2 ... September 2002 (Reference: The National Post, March 16th,2002)

Scientists predict that the Magnetic North Pole, which has been in Canada for at least four centuries, is heading for Russia. The Geological Survey of Canada (GSC) has located the current position of the Magnetic North Pole to be: 81 degrees, 3 minutes North and 110 degrees, 8 minutes West, or about 200 km off the northern tip of Ellef Ringes Island in the Arctic Ocean.

Larry Newitt, a senior geophysicist at the GSC, has indicated through his analysis of survey data that the Magnetic Pole is moving in a north-westerly direction at an average speed of 40 kilometres per year. In the past it moved at 10 kilometres per year. At its current direction and speed, Magnetic North will move out of Canadian waters by 2005 and reach the coast of Siberia in about 50 years.

The "New" National Society Of Professional Surveyors

Reprinted from "Evergreen State Surveyor" Volume 28, Number 4, Winter, 2004

For twenty five years, the National Society of Professional Surveyors (NSPS) has been the national voice and advocate for the surveying profession in the United States, as a member of the American Congress on Surveying and Mapping (ACSM). In 2004, changes in the ACSM structure transformed NSPS into a truly independent organization with national stature and responsibilities.

The most significant change has been that surveyors who join the newly independent NSPS exercise direct control over the activities and programs of our society and its resources. Self-governance, underpinned by financial autonomy, has positioned NSPS to better represent the surveying profession at a myriad of professional and political forums and to enhance decisively the quality of the profession and its public image.

NSPS is the largest member of the re-organized ACSM, and will continue our traditionally strong participation in the Joint Government Affairs Committee and in planning and contributing to the national conferences of ACSM. In these as in all other matters deemed important by and to surveyors, the new NSPS is accountable first and foremost to our membership.

Dedicated membership inspires dedicated organizations. In the past, generations of surveyors have strived to build a national society for surveyors with a presence where it matters most-on Capitol Hill, where policies are made, and in schools and colleges, where the promise of the future resides. Thanks to these visionaries, we have such a society. We now need to double our efforts to insure that NSPS continues to evolve as one of the most respected professional societies in the U.S. We the NSPS Board of Directors and the NSPS Board of Governors invite each and every member of the surveying community to join us in this pursuit.

NSPS-an active society largely through the efforts of our members, NSPS is engaged in all aspects of surveying practice and education. With your involvement more can and will be done! The association has crafted its role as the national organization of surveyors around issues most in need of national focus. Some of them directly affect every surveyor in the country. So much of the surveyors' work is done away from the corridors of power that it is easy to forget how legislation can impact what we do and how we do it. NSPS promotes and protects the interests of the profession in federal legislative and regulatory arenas. Surveying is a multifaceted community. Beyond private practice, today's profession includes many practitioners working in various federal, state, and local government agencies with geospatial information and planning mandates. The Federal Emergency Management Agency (FEMA), the National Oceanic and Atmospheric Administration (NOAA), the National Geodetic Survey (NGS), the Federal Geodetic Data Committee (FGDC), the United States Geological Survey (USGS), and the Bureau of Land Management (BLM) all have a strong surveying and mapping component in their programs which have a bearing on the national land cadastre, on floodplain management, on home ownership, on natural hazards mitigation, and homeland security. NSPS now represents the entire surveying community in these government programs.

In the international arena too, NSPS is the profession's national voice, chairing and participating in the working commissions of the International Federation of Surveyors (FIG). Education is another priority area for the new NSPS. Members of the society assist the Accreditation Board of Engineering and Technology (ABET) in evaluating curriculum accreditations, and NSPS will continue to work with the National Council of Examiners for Engineers and Surveyors (NCEES) on issues of mutual interest. Apart from promoting higher education standards through better accreditation processes, NSPS supports surveying and mapping education with scholarships, fellowships, and awards funded and administered by the NSPS Foundation. With a soon-to-be released recruitment speakers' kit intended to present surveying as an exciting career choice, the association will build on two of

our highly acclaimed programs for middle and high schools, the Trig-Star program and the Boys Scouts Surveying Merit Badge program. We will continue to lead in the development and promotion of ALTA standards, in continuing education, and in certification programs for surveyors, such as the national Certified Surveying Technician (CST) program, the Hydrographer Certification program, and certification of surveyors to expedite letters of map amendment related to floodplain mapping.

Professionals join professional societies for a variety of reasons. One of them is a need for peer-to-peer interaction at conferences and through the association's publications. Given that technology and competition have taken many small, private, scientific publishers out of business, professional societies in many fields, including surveying and mapping, are increasingly being viewed as the guardians of academic freedom. In 2004, NSPS became the official publisher of Surveying and Land Information Science (SaLIS), along with the American Association for Geodetic Surveying (AAGS) and the Geographic and Land Information Science (GLIS). We are dedicated to the advancement of the profession both technical and intellectual. For a society with 50 state affiliates, communication is of paramount importance. NSPS has three tools for communicating with our membership, the industry, and the surveying community at large. One of them is the ACSM Bulletin (http://www.acsm.net/ publist.html), which comes out six times a year and carries news and features informing about the latest developments in the geospatial sciences. The Government Affairs Update is a monthly e-newsletter which keeps members abreast of latest developments in the legislative arena and about activities either planned or already being undertaken. The Map Exhibit planned for April 2005 in the Library of Congress is one such activity that was previewed in the Update. The NSPS call to surveyors to support fellow surveyors in Florida during the disastrous hurricane season of 2004 is another type of "update" news delivered to members. The third communication vehicle that NSPS intends to use to its fullest is our new website, www.nspsmo.org. Currently under construction, the Board of Directors recently initiated a reconstruction designed to serve the membership in every way possible, while presenting surveying in a detailed and stylish fashion.

NSPS utilizes two other, valuable means of communicating with the surveying community nation wide - the Area Directors and the state representatives to the NSPS Board of Governors. The Directors and Governors afford the membership a direct one-on-one conduit for information and ideas. Take advantage of these representatives, they will make your voice be heard and you will better prepare them to speak to the issues affecting all of us in surveying.

NSPS is dedicated to the advancement of the surveying and mapping profession. If you have chosen surveying as your career, you can help NSPS continue to improve the quality, image, and future of your profession. An educated and diverse community, acting in concert, is the single strongest voice we can raise.

Come join us! @

To join NSPS, do so by going through the LSAW membership application form and finding NSPS

NSPS Member Benefits

- *Professional representation and promotion at the national level*
- *Publishing opportunities in the academic journal. Surveying and Land Information Sciences (SaLIS).*
- *Continuing education opportunities*
- *Quality professional and academic publications*
- *Creation and preparation of public and educational outreach material*
  - *Trig-Star presentations and testing packages*
  - *Boy Scouts surveying merit badges*
  - *Profession recruitment Speakers Kit*
  - *Scholarships and fellowship opportunities*
- *National professional and technical certification*
  - *Hydrographic certification*
  - *Certified Surveying Technician (CST) Program*
- *Discounts*
  - *On professional books*
  - *On professional liability insurance*
  - *On workshops and conventions registration*
  - *Classified advertising in the ACSM Bulletin.*
- *Group & individual health and life insurance*
- *Networking opportunities*
- *On-line services.*

THE PROFESSIONAL SEAL

by Knud E. Hermansen P.L.S. PE., Ph.D., Esq.
Reprinted from "The Empire State Surveyor" January, 2005

ABSTRACT

Almost all states require a surveyor, upon licensing, to obtain a professional seal of a design and size prescribed by the licensing board. Unfortunately, many licensing boards fail to explain why, when, and where the seal is used. This article explains why, when, and where along with some guidelines for the proper use of the professional seal.

INTRODUCTION

Most surveyors when they are initially licensed in a jurisdiction are required to obtain a professional seal. Normally, the same letter congratulating the surveyor on passing the exam also directs the surveyor to obtain a professional seal of a design and size specified by the licensing board. Unfortunately, the letter and subsequent documents from the licensing board fail to tell the surveyor why the seal is necessary, when it is to be used, and where it should be used. The surveyor is forced to learn why, when, and where from reading the licensing statute, observing those previously licensed, relying on his or her own intuition, or, in some cases, hoping the document or form will direct when and where to use the seal. This article has been written to address why, when, and where a professional seal should be used.

WHY

Why the professional seal is required is frequently explained in one or more sections found in the licensing act. Most of the time the explanation is vague, confusing, or incomplete. A review of some case law on the subject reveals there are generally five common reasons for requiring the surveyor to obtain and use a seal.

First, the seal signifies that the person whose name appears on the seal is qualified to practice surveying within the jurisdiction shown on the seal. Documents prepared by the surveyor pass from his or her hands and are used by the public, lending institutions, title companies, or successive landowners. The imprint of the seal on the document acts as an attestation or, in part, an affidavit of the surveyor's competence and authorization to practice the profession of surveying. To the layperson who sees the seal on a document, the emboss or stamp raises the inference of official authority (perhaps incorrectly) and, at the very least, the person is authorized and competent to practice surveying. The seal's design and size; the prominent display of the jurisdiction, profession, and name of the licensee; and the professional's unique license number all combine to connote a vesting of State trust and responsibility on the licensee.

Second, the seal attests to the genuineness of the surveyor's signature and in many cases stands in the same stead as the surveyor's signature. The seal is personal and considered to be in the possession or under the control of the surveyor at all times. As such, the appearance of the seal on a document is prima facie evidence that the signature on the document is the genuine signature of the surveyor. While a signature may be forged, it is extremely difficult to forge the embossed relief or produce an undetectible and realistic facsimile of the surveyor's seal short of ordering a duplicate seal or taking possession of the original seal.

Third, the seal signifies that the person has prepared, supervised, or reviewed the document that the seal has been affixed on. The seal, as a symbol of achievement, competency, trust, and responsibility, carries with it a duty for the surveyor to use the seal in a competent, trustworthy, responsible, and professional manner. Signing and embossing the seal on to a document is meant to impress on

The seal, as a symbol of achievement, competency, trust, and responsibility, carries with it a duty for the surveyor to use the seal in a competent, trustworthy, responsible, and professional manner.

the surveyor a sense of solemnity, respect, and responsibility for his or her actions. While a signature may be scrawled in a few seconds, the act of locating and legibly embossing or imprinting a seal's facsimile on the document cannot be done in haste. This is one reason many jurisdictions did or continue to outlaw the use of rubber stamps and require the embossing seal.

In conjunction with the third reason, the fourth reason for the seal is to attest to the surveyor's willingness to assume responsibility for the information or work the document represents. While many people may work on the project and several may be responsible for portions of the project, the person that takes ultimate responsibility is the individual or corporation whose seal is affixed to the document. With the responsibility to review and supervise the project (as the seal signifies) comes the liability for mistakes, errors, and omissions.

Fifth, and finally, as a result of the previous reasons, the seal may be required before an agency or person approves, reviews, accepts, pays for, or records a document. By requiring a professional seal, an agency or person makes known its desire and is reasonably assured that the work was performed, supervised, or reviewed by someone that has achieved the minimum standard of competency necessary to enter the profession and who is also willing and can be held liable for the information found in the document or represented by the document.

WHEN

Knowing why the profession seal is used or required helps determine when and where the seal should be used in the course of professional service. As a general statement, surveyors should use their seal when they have performed, supervised, or reviewed the work and they are willing to assume responsibility (and ultimately liability) for the work. In this regard, the possession of a seal is different from the use of the seal. As a general rule, a surveyor is said to be "competent" when they are allowed to obtain a seal while the surveyor is said to be a "professional" if they know when to properly use the seal.

WHERE

Where to use the professional seal is generally intertwined with the question on when to use the seal. As a general rule, a seal can be used on any document prepared, supervised, or reviewed by the surveyor. Therefore, the seal should be used on all plans, plats, reports, designs, opinions, and official letters that relate to the surveyor's professional practice, so long as the document has been prepared, supervised, or reviewed by the surveyor.

The professional seal should be placed or located on the document so that the seal is noticeable, the extent of the surveyor's responsibility is obvious, and it is near or on the surveyor's signature, certificate, or other important or critical information. The first criterion is important when a seal is required before the document can be accepted or recorded. By placing the seal where it will be easily noticed, it gives the document an aura of professionalism and fitness. Surveyors, other professionals, recorder of deeds, and others have become so accustomed to seeing a seal on some documents that the absence of a seal immediately raises questions and draws a more critical examination of the work. A professional seal noticeably displayed on a document also helps give the document an authoritative and official flavor.

The second criterion; that is, placing the seal on certain documents or a particular position on the document, helps infer the extent of the surveyor's responsibility. For example, the seal on the cover sheet of a binder containing five drawings denotes complete responsibility for all the drawings rather than one of the drawings which would occur if the seal were only found on one of the drawings within the binder. Similarly, placing the seal at the end or on the cover of a report or field book is more suggestive of complete responsibility for the contents than would be inferred by placing the seal on an intermediate chapter or field book page that may only contain one-day's work.

Finally, addressing the last criterion, the seal should be placed near or on the surveyor's signature and other important information. Not only does this help prevent fraudulent additions or changes but it helps draw the reader's attention to the importance of the information and reinforces the authenticity of the signature.

GUIDELINES

In light of the discussion on why, when, and where seals should be used, the following are some guidelines that should be followed after obtaining but

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Take The Assets - Leave The Liabilities

By William S. O'Hara

Reprinted from "The Ontario Land Surveyor" Volume 48, No. 1, Winter 2005

There are many ways to acquire a professional land surveyor's practice and all of the good things that go along with the practice. The most common ways are to purchase the shares of a company operating the practice, or to purchase the assets of the company. Other arrangements are limited only by the imagination. The specific method used on the purchase of a professional practice is often dictated by the tax implications to the parties involved. No matter which method is used, the main aim of the purchaser is usually to gain the maximum benefit of the goodwill, the equipment and the personnel of the acquired land surveyor's practice, as well as the existing work product.

Often there are decades of records in the vaults of a professional land surveyor's professional practice. Most of the inventory of surveys and field notes acquired will be of the highest quality, reflecting the reputation of the surveyor or surveyors who produced the work. But lurking in the dark recesses of even the best surveyors' practices are problem surveys - surveys or notes that were not quite accurate when they were done, with problems that have not yet come to light.

If you are acquiring a professional land surveyor's practice, how do you acquire the assets without assuming the liabilities? How do you avoid becoming the guarantor of the work of another professional? How do you avoid blame for mistakes you did not make?

Over the next few years a large number of land surveyors will reach retirement age and will want to sell their practices. This will coincide with a general trend in professional practices to increase in size and decrease in numbers. Ten years from now there will be fewer land surveying practices in Ontario, with each one enjoying the efficiencies inherent in a larger scale. The issue of avoiding hidden liabilities will arise whenever a professional land surveying practice changes hands. This brief article may provide some practical suggestions to assist purchasers of land surveying practices to avoid unwanted liabilities. At the same time it is hoped that sellers of practices can gain some insight into ways of making their practices more attractive to potential buyers.

Due diligence

The first step in acquiring a professional practice, of course, is to carefully scrutinize the books and records of the practice to see what you are proposing to purchase. This may involve an audit of both the books and the inventory. It will be useful to find out the claims record of the selling surveyor. How many claims have been made against the selling surveyor in the past? How many of those claims were paid? What was the value of the claims paid? Are there signs of instability in the selling surveyor's practice that might indicate frailties in the work product? For example, has there been frequent staff turnover, or frequent changes in the location of the practice? Have there been any complaints to the AOLS or disciplinary problems with the selling surveyor?

The overall quality of the selling surveyor's work product will usually be known in the local surveying community, but it is still imperative to conduct a diligent examination of the state of the inventory. Is the work product well organized and accessible? Are there gaps or inconsistencies in the work product from year to year that might indicate problems to come? Are the selling surveyor's financial records up to date and thorough? Is there any discrepancy between the quality of the work product disclosed to the public and the financial records that are not disclosed to the public? Although mistakes in financial records do not usually result in claims, they are often a good barometer of the care and professionalism of the selling surveyor.

Transfer of liability

Does the purchase of a land surveying practice automatically transfer the liabilities of the practice to the purchaser? The answer depends on how the sale was structured. In a share purchase the legal entity continues to exist with new owners carrying on the business. This is often done where employees or associates of a retiring land surveyor take over the existing practice. The location of the

practice and even the name of the practice may stay the same. In that case the legal entity continues and it remains responsible for the past negligence of the legal entity and any past breaches of contract. Similar consequences flow where a professional association or a partnership is involved.

Where the assets of an existing practice are purchased and the existing legal entity ceases to exist there is no automatic transfer of liabilities. The legal entity that made the error or breached the contract no longer exists. If a claim arises after the selling corporation (or partnership or professional association) has ceased to exist there may still be claims against the individuals involved in the former entity. The professional liability insurer of the individuals involved in the former legal entity will likely respond to the claim even after the entity has been wound up. But there will be no claim against the purchaser of the assets or the records of the former legal entity. The new purchaser is insulated by the purchase.

Independent liability of the purchaser

Even though the purchaser is insulated by the asset purchase from the errors, omissions and breaches of contract committed by the former legal entity, that does not preclude the purchaser from becoming independently liable for the mistakes made by the former entity or the individuals involved in the former entity. For example, if the purchaser purchases the assets of a survey practice that includes a defective plan of survey, and the purchaser agrees to sell the defective plan of survey to a client after the sale, the purchaser will be independently liable for selling the defective plan of survey. A surveyor who relies on information supplied by others without confirming the information must take the consequences: Moneypenny v. Hartland (1824), 171 E.R. 1227. The purchaser of the land surveying practice, depending on the terms of agreement of purchase and sale, may have a claim against the seller for preparing the defective plan of survey in the first place, as set out below, but that does not eliminate his or her own liability for selling it to another.

The purchaser can reduce his or her independent exposure to liability in respect of the sale of plans of survey acquired from the seller by using limitation of liability clauses, as described in *Avoiding Professional Liability*, William S. O'Hara, The Ontario Land Surveyor, Volume 47, No. 1, page 25.

Representations and warranties

Purchasers of businesses, including professional practices, usually extract a list of representations and warranties from the seller of the business confirming assumptions relating to the business on which the purchaser relied. The representations and warranties are included in the agreement of purchase and sale of the business. They can be used prior to the actual sale to elicit information as part of the due diligence process. They should set out the status of any outstanding claims or litigation. Representations can set out the level of quality of the seller's work product as a means of holding the seller accountable for claims about quality used to interest the purchaser in the business. If the representations turn out to be incorrect, the purchaser has a cause of action against the seller.

Warranties are the guarantees that accompany the representations. They set out the promises made by the seller of the business as to the state of affairs of the business as of the date of the sale.

Warranties can also include promises to do certain things in the future. For example, they can specify that the seller will be responsible to the purchaser for any liability that arises from errors or omissions in the work product purchased by the purchaser of the business or breaches of contract. Warranties can also provide that the seller will continue to carry professional liability insurance for a specified period of time.

Hold harmless agreements

Hold harmless agreements are a type of indemnity agreement contained in the agreement of purchase and sale. They provide that the seller of the business will protect the purchaser from any harm arising from the purchase of the business. This may include claims by third parties against the selling surveyor made after the sale arising out of professional services provided before the sale, or claims by third parties against the purchasing surveyor arising out of errors or omissions in the seller's work product purchased in the sale.

Hold harmless agreements provide the remedy in agreements of purchase and sale where there has been a misrepresentation or a breach of warranty. They are usually open-ended, so that the seller is obligated to pay the purchaser regardless of the amount involved. From the point of view of the

purchaser of the business, this provides maximum protection from any hidden liabilities - at least to the extent of the seller's assets. From the point of view of the seller, an unlimited indemnity or a hold harmless clause is like writing a blank cheque. It requires considerable confidence on the part of the seller of a professional practice to guarantee the quality of his or her work product and agree to bear all of the expenses associated with errors or omission in the work product or breaches of contract.

Professional liability insurance

Whether selling or purchasing a land surveying practice, it is wise to consult with your broker or professional liability insurer as part of the process. Ideally, both parties should obtain letters from their respective insurers in advance of the closing setting out the terms of the proposed transaction, including any indemnities or hold harmless agreements, and the insurers' position on coverage. Often a purchaser's professional liability insurer will cooperate and simply add the newly acquired inventory (warts and all) to the existing risks insured by the purchaser. This is the best possible result for the purchaser. It may also benefit the seller of the practice, but the seller should confirm his position with any insurers who may be on risk. There could be many.

Insurance policies are usually either "occurrence" policies or "claims-made" policies. Occurrence policies will provide coverage for losses occurring in the year in which the policy is held, no matter when the error or omission was made, or when the claim is made.

Claims-made policies are more common in current professional liability policies. They provide coverage for any claims made during the policy period, no matter when the error or omission occurred, or when it was discovered.

In addition to occurrence policies and claims-made policies, there are some policies that combine attributes of both. A land surveyor who has been practising for a number of years may have several insurers interested in the arrangements made by the land surveyor on the sale of his or her practice. The best practice for the selling land surveyor is to clear the sale arrangements with any insurer with an interest in the practice. The best practice for the purchasing land surveyor is to obtain warranties from the seller that this has been done.

Many retiring professionals maintain run off or tail insurance to provide professional liability coverage for any claims made in the years after retirement. Insurance of this kind is often described as being cheaper and more effective than sleeping pills. Purchasers of a professional practice may also sleep more peacefully knowing that the seller has this type of insurance in place. An agreement of purchase and sale can specify that the seller will take all necessary steps to ensure compliance with the tail insurance to ensure that coverage is not lost by reason of late reporting or failure to pay premiums, for example.

Professional liability policies include two important types of coverage for the professional. The primary coverage is the agreement to indemnify the professional in respect of any judgment for damages against the professional, subject to the terms of the policy. The second is the agreement to pay defence costs of the professional who has been sued. It is important to have both in place, especially when purchasing a professional practice. The duty to defend is triggered when a claim within coverage is made against the purchasing professional, no matter how spurious the claim. A claimant who has a claim against a retired surveyor whose professional practice has ceased to exist will take the shot gun approach in litigation and will sue any party with a connection to the retired surveyor. These claims are certain to be a nuisance and can usually be disposed of quickly by counsel for the purchasing surveyor. Apart from being a nuisance, these claims can be expensive to deal with. It is best to ensure in advance of the purchase that an insurer will bear the expense.

Conclusions

The critical thing from the point of view of both the seller and the purchaser is to ensure that there are no gaps in responsibility or coverage. Just as the responsibility for breaches of contract and errors and omissions in the purchased inventory of the professional practice should be set out in the purchase and sale agreement in advance of the sale, coverage for the various risks assumed should be ascertained before the sale. Obviously, coverage for the buyer and the seller should match the risks assumed by of each of the parties. Keeping these principles in mind

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THE PRACTICE

BY KIM LEAVITT, PLS, NSPS GOVERNOR FOR IDAHO

Reprinted from "Gem State Surveyor" Winter 2004-2005

I have always liked the saying "Practice what you preach". The character of an individual can be seen through the profession he chooses. Doctors, for example, take upon themselves a lifetime of helping others; it is a very noble cause and an honored profession. Attorneys can also choose to represent those who need help in dealing with matters of law; they give legal advice and work to provide fair representation to a jury of peers. The law requires both professions to obtain knowledge, training, credentials and licensing in order to practice.

The profession of surveying has given me the opportunity to practice honorable characteristics. I have enjoyed being educated, learning the proper procedures to ensure fair and equitable methods of practice. It is my duty to use the proper surveying procedures, as prescribed by laws and rules, rather than to represent one individual on one side of a property line. Surveying deals with truth, but is not always equitable. Facts can be gathered, but are not always interpreted the same; evidence supported, but not always accepted. Judgements made reasonable and reasonable judgements made.

Our clients may include individuals, corporations, agencies, governments, municipalities or courts of law. No matter who we represent, the parcel of earth we survey remains as we find it. Its report of measurements and elevations are the same. Our responsibility is to be correct and accurate, both terms being quite noble.

A certification is made and signed that we performed our duty properly.

A great demand for integrity is placed on us. This, like all noble attributes, is earned through public trust.

The practice of surveying has made me a better person. I owe more to my profession than membership in professional societies. This profession is an ongoing character builder. It molds you into a person of honor, trust and integrity. If you wish for those attributes in yourself, you probably have a ways to go. If the public sees those attributes in you, you have arrived!

"Practice what you preach".@

Continued from page 1 - "President's Message"

Since returning from Ontario the executive committee has interviewed candidates for the position of Public member on council. Walter Streelasky's term is over this year. Although we did not have a large response to our add, the quality of the people whom we short listed for interviews was very impressive. Any one of them would have had something to offer our Association. We have submitted a list of 3 members to the government. Hopefully they will have made their decision in time for the AGM.

Max Putnam and the convention committee has been very busy planning the 2005 AGM. It appears that they have everything under control and a good time planned in Saskatoon.

The practice committee under the guidance of Barry Clark has been very active this year. They have done a review of well site plans and hosted a workshop with ISC regarding survey plan problems. I believe we can expect some resolutions at the AGM regarding these issues. I urge all members to use our web site to look at some of these issues and give us your input at the AGM.

As this will be my last report to the membership, I thank you for choosing me as your President and I hope I have been a good ambassador for our Association.

I have been made welcome all across our country and I urge everyone to consider becoming President at least once during your career. Not only will you be helping the Association, you will meet many interesting people and expand your knowledge of our country. @

Continued from page 14 - "Helicopters and Survey Operations"

veyor partner who had been waiting for us on another mountaintop. They say things happen in threes. Our limit had been pushed to four. We called it a day and headed back to base camp, not wanting to press our luck any further.

A few days of unfavourable weather would delay my return to the station on the ridge where we had seen the bears. For the couple of hours that I would remain on station by myself, I spent a lot of the time looking over my shoulder. I had difficulty turning the angles that day; my concentration was off. It wasn't the cold winds or the bulkiness of the nylon parka that slowed my progress. Though no bears appeared, each time I moved my arms, I winced at the rustling sound of nylon brushing nylon, half expecting to see one approaching. @

ADVERSE POSSESSION IN SASKATCHEWAN

By: W.W. Stockton, S.L.S., C.L.S.

Is there such a thing as Title by Adverse Possession in Saskatchewan? Section 21 of the Land Titles Act states a resounding No! However, Section 18 of the Act opens up the door for Implied Interests that could have much the same effect as title by adverse possession.

I first came across this anomaly when preparing a subdivision application for a farm site where an unsurveyed, untitled municipal road encroached on our client's land. A letter from the Rural Municipality advised that they had a legal opinion to the effect that the road qualified as a dedicated public highway. My first reaction was to dismiss the letter out of hand, however, subsequent research revealed that they may very well be right.

There have been two decided Court cases in Saskatchewan which illustrate the effect of Implied Interests. The first was *Vipod v. Rural Municipality of Griffin No. 66, 1987* and the second was *Shirkie v. Kaymac Holdings Ltd., 2003*. These cases were quite similar.

In the second case the plaintiff (Shirkie) brought an action for a declaration that a diversionary road that crossed the defendant's (Kaymac Holdings Ltd.) land, had become a public highway. The defendant counterclaimed. The case was heard before Justice J. Kyle in the Judicial Centre of Estevan.

In deciding the case, the question at hand was whether the road on the defendant's land was a private or a public road. Clause (c) of Subsection 18(1) of the Land Titles Act reads as follows:

> *18(1) Subject to subsection (2), every title and the land for which the title has been issued, is, by implication and without any special mention in the title, deemed to be subject to the following exceptions, reservations and interests:*
>
> *(c) any public highway or right of way or other public easement, however created, on, over or with respect to the land included in the Title.*

It can be noted here that Section 18 also lists a number of other implied interests such as tenancy agreements, leases, Crown interests etc.

In deciding whether the road in question was private or public, Justice Kyle referred to a number of previously decided court cases which all had their roots in English Common Law. The principal involved was the doctrine of Dedication and Acceptance. The owner had to have the intention to dedicate and there had to be acceptance by the public.

The case for Dedication was as follows:

(1) The road had been in existence for more than 70 years.

(2) The road had been maintained by the Municipality over many years.

(3) There were no signs of assertion of privacy.

(4) It was considered as a connector of two other roads.

(5) A previous owner had fenced the adjacent land and had respected the roadway in so doing.

The case for Acceptance was as follows:

> *"The division is not long and for all it's known history it was accepted without complaint by the landowner. It has been used by farmers, hunters, snowmobilers, berry pickers and , on at least one occasion, by a swain courting a neighborhood woman who lived on the other side of the ravine area."* *(Direct quote from the Judgment).*

The conclusion of the Judgment reads as follows:

> *"Upon consideration of the evidence it is clear that the diversionary road meets the criteria established by law and it is a public highway. A declaration to that effect will issue as will an order directing the defendant to remove the fencing which blocks access to this road and to replace the fences that were removed improperly. The road-*

way should have a width of approximately 66 feet."

The land in question is the S.E. ¼ Sec. 29-Twp.11-Rge.6-W.2M. A recent Title search reveals that to this date the road has not been surveyed and there is no exception on the Title. The only clue on the Title is the registration of an Interest, *"Certificate of Pending Litigation."*

At the 1923 Annual Meeting of the Saskatchewan Land Surveyors Association C.J. Milligan, Master of Titles, noted the absurdity of the situation of a squatter gaining legal title by possession against a registered owner but, under a guaranteed system of Titles, never being able to register his Title. Mr. Milligan further went on to state,

"In order to remove any possibility of doubt on the question so vitally important under our guaranteed system of land titles, where, the registered owner has the right to rely on his registered Title, I have asked for the following amendment to the Land Titles Act.

61(2) After land has been brought under the Act no right, title or interest, adverse to or in derogation of the Title or the right to possession of the registered owner shall be acquired or be held to have been acquired since December 19, 1913 by the possession of another, and the right of the registered owner to make an entry or to bring an action or suit to recover the land of which he is such registered owner shall not be held to be or to have been impaired or affected by any such possession since the said date."

This section of the Land Titles Act was amended in 1923; however, as we can see from current court decisions, the course of the law did not entirely follow the path envisioned by Mr. Milligan.

When preparing Real Property Reports, Land Surveyors should be aware of the possibility of Implied Interests that may affect an owner's use and enjoyment of their land. When our son purchased a house in Toronto, the Real Property Report stated that a power line existed at the rear of the property. It further stated that there was not a registered easement for the power line, however, it indicated that, in law, an easement could exist. Perhaps we should be doing the same for similar situations encountered here in Saskatchewan. @

Continued from page 4 - "Councillor's Corner"

would be starting the course at least eight years after completion of the survey diploma course. The policy seemed fair enough, but what a damper it put on my future career hopes. In 1992, I successfully obtained my B. Sc. in Survey Engineering. The WCBELS had been contacted a couple of years prior to completion of my course to ensure the Cadastral electives would be met to get the "*Certificate of Completion*".

I entered into a Land Surveyor in Training agreement with Chris Everett in 1990 to get some practical field experience during my summer employment with Prairie Surveys Ltd. Shortly before Prairie Surveys Ltd. went out of business in 1992, I obtained employment with Condon Surveys in Regina. Article agreements were transferred from Chris Everett to James Condon, SLS. The SLSA advised me early in 1993 that I needed 29 days of practical field experience to complete the required minimum of one year practical field experience. The practical field experience period was completed that summer, and I would be able to write the Professional Examinations in April, 1994.

I wrote the complete set of examinations twice, and one supplementary before I was successful in obtaining the minimum passing average of 70%. Commission #277 was granted to me in July 1996. The commission was presented to me at the 1997 AGM and it was noted by President Max Putnam that no other candidates had obtained a commission as an SLS since 1986 when Norm Cote and Tom Sansom were granted their commissions. I see only 13 other people have obtained their commission since July 1996, not enough to sustain the membership numbers.

It seems to me the biggest setbacks in my goal to become a SLS occurred when the STI survey diploma program was not recognized by either the ALSA or U. of C. It also seems to me that some credits for my practical field experience in Alberta could have been given consideration in Saskatchewan.

It had taken me 19 years before I finally realized my dream of obtaining my commission as a SLS... but nobody had said that becoming an SLS would be easy! @

How Things Work: Cellular Phone-Based Technologies in Surveying

Reprinted from "Professional Surveyor" Volume 24, Number 8, August 2004 (As seen in "The Link" December 2004)

Introduction

Efficient use of Global Positioning System (GPS) as a survey technology, especially if using the real-time kinematic (RTK) option, involves the use of other radio wave-based technologies to implement it. The dominant method worldwide has been to use a transmitter at the base station and a receiver at the rover that use the UHF or VHF radio bands. As GPS rovers are now being built so that they can also receive RTK correction data from a GPS reference station or network using a cellular phone, this month's column covers a few facts about the use of cellular phones for data.

Growing cellular phone system coverage is helping make wider use and acceptance of this new surveying technology, providing both the coverage and bandwidth necessary for advanced network capabilities. The newest technologies enable the development of services for surveyors such as cellular phone-based RTK corrections as well as features used by many others such as access to the Internet, downloading data files from corporate LANs and websites, or sending and receiving files. Many providers charge for the data transfer service on the amount of data or packets (to be explained below) that are sent or received.

Cellular Phone Technology Development

Even though the presence of cellular phones is relatively short, four generations of technological change have happened, each with increasing speeds and capabilities, with more on the horizon. Advanced Mobile Phone System (AMPS) technology, introduced in the late 1970s, is the first generation and is now referred to as 1 G, for first generation.

The second generation (2G) was developed in the 1990s to bring digital technology for cellular voice communication and continues to be used today. There are several standards for analog and digital networks that may all be in use in a region. They are GSM (Global System for Mobile Communication), CDMA (Code-Division Multiple Access), and TDMA (Time-Division Multiple Access).

To support data transfer using packet-switched technology (such as Internet access), 2.5G was developed (so-called because it wasn't quite the already-postulated 3G) in the late 1990s. The various standards have different names for 2.5G. For GSM it is General Packet Radio Service (GPRS); for CDMA it is CDMA2000 lxRTT. When 3G is introduced it is expected to make mobile access of even larger office datasets through the Internet. Remote access to data by surveyors by using a 2.5G cellular phone and the Internet is already feasible. When Universal Mobile Telecommunications System (UMTS) is enabled with 3G, it will make rapid access of even larger files a reality (see www.umts-forum.org).

What is Packet-Switched?

Circuit switched technology has been the primary standard used by communication networks through most of the 1990s. Circuit switching means that when a call is made, one path (circuit) is established between the parties for the duration of the call. Packet switching is a more effective standard (in terms of resource use) for establishing that connection, which may be for voice or data (both digital), particularly for cellular phone technology. To make this work, the voice or data is broken up into data "packets," and then sent on any path available at the time that packet is generated. At the receiving end, the packets are reassembled in the correct order. This allows other calls to use the same circuits, maximizing the use of resources (both the bandwidth in a single circuit as well as

the circuits themselves). CDPD (Cellular Digital Packet Data), GPRS, CDMA2000, and 3G technology all use packet-switching. Though not cell phone technology, you may be interested to learn that Bluetooth communications and communications along the Internet is also packet-switched.

Connecting Cell Phones to Rovers

Even if not used for RTK, GPS cellular phones are able to transmit data over long distances, since the cellular phone provider is responsible for installing and maintaining the network. Of course, a user must be within the network's coverage area, and reception has to be good enough that the desired data rate can be achieved. Thus, before cellular phone technology is regarded as a panacea for other wireless systems, its effectiveness in the modes and locations it will be used in must be investigated. Cellular technology also enables surveyors to use cell phones to connect to the Internet.

With the development of area-wide GPS reference station networks in some regions, the use of cellular packetswitched technology is being utilized to connect to the network, and receive cm-accurate RTK corrections. Since the cellular phone supports two-way technology, the rover is able to communicate its position to the network and then receive back from the network RTK corrections optimized for its location.

How does a surveyor determine whether the phone he has or may get is appropriate for surveying? First, find out what coverage you can get from each provider so that you can see whether your planned work location even has claimed cellular phone connectivity. Then check to see if they offer a data service (as opposed to voice). If they do, they can then recommend a particular phone model. Bluetooth-enabled phones, to eliminate the cable connection to the rover, can be handy if the GPS manufacturer has a Bluetooth-enabled rover. Generally your GPS manufacturer will have a list of recommended cell phone providers who have been checked for compatibility. Remember that this list does not mean that a particular provider is endorsed.

With the manufacturer, check to see if the receiver you are considering specifically supports packet-switched cell phone technology. Cellular phone support may mean that circuit-switched technology is supported. Also check to see if NTRIP (Networked Transport of RTCM via Internet Protocol)) is supported for data security. Developing Technologies in the Near Future

It is clear that the combination of the "wireless world" and the Internet will significantly impact the way the surveyor of the future works, in the field as well as the office.

Today's wireless world differs significantly from that which surveyors knew even a few decades ago. Keeping up with its changes and the pros and cons of each new twist remains a constant challenge for surveyors. Good data sources and analysis of these technologies are required to determine which wireless technology or combination of technologies must be used in a particular situation, similar to the judgement that must be made to select GPS, total station, or both. @

Acknowledgements: Daniel Wallace of Trimble

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should permit the purchaser to acquire the benefits of a land surveying practice without acquiring the unwanted liabilities, and at the same time protect the seller from any uninsured liabilities.@

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This brief article is intended to raise issues relating to the purchase of a professional practice. It should not be relied upon as legal advice. Consult your lawyer for legal advice regarding any specific issue raised in this article.

Continued from page 32- "The Professional Seal"

before using a professional seal. First, make sure those persons that assume responsibility for the survey are the ones that seal the document(s). If the jurisdiction permits it, and most do, obtain and use a corporate surveying seal rather than a personal seal on work that has been supervised and reviewed by a surveyor employed by a corporation. The general saying that "where go the profits (money) should go the responsibility" is appropriate here. In partnerships and sole proprietorships, two or more seals appearing on one document may be appropriate depending on the situation. In other words, if more than one licensed surveyor performed, supervised, or reviewed the work and should or can be held responsible for the work (e.g. other partners) then more than one surveyor should affix their seal to the document. While this may not necessarily reduce the liability for any one surveyor, it should and usually does impress on other surveyors the seriousness and responsibility (also liability) that is expected from them in performing their work or managing the business. In certain cases, where a surveyor may only have limited responsibility, say for example supervision of the field work, the surveyor (i.e. party chief) should affix their seal to the field book.

The second suggestion is to avoid using a rubber/ink stamp. If at all possible emboss the seal on the document. One way to make an embossment anywhere on the drawing is to emboss on gold, metal, mylar, or paper "leaf" and firmly affix the leaf to the document so it cannot be removed without destroying the leaf or the document. In the past, a process similar to this was accomplished by dropping hot wax on the document, then immediately pressing a seal into the wax while the wax was still warm and pliable.

Embossing rather than stamping addresses three important concerns. First, it clearly identifies the original or master copies. In these days of fast, easy, crisp, and clear copies, copies are difficult to tell from an original that contains an ink stamp facsimile of the surveyor's seal. Hence, unauthorized changes can easily be made and remain undetected. (In fact, it is not inconceivable that an entirely fraudulent drawing could be produced and

contain a "seal" copied from an ink stamped seal taken from another plat.) On the other hand, a copy of a document with an embossed seal will usually show enough detail of the seal to authenticate the document but will not contain the raised relief found on the original. Second, since embossing tends to be slower and take more effort in order to provide legible relief, it forces the surveyor to take more time and reflect on the seriousness and responsibility of their action. Third, embossing paper makes it extremely difficult to write over the embossed area without destroying the relief. Similarly, embossing an area that contains writing or graphics allows the writing or graphics to remain legible while preventing unauthorized copying or alterations since these actions would normally destroy the raised relief. This characteristic may be used by the surveyor to prevent alteration or removal of a copyright, caveat, name, signature, or so on that was placed on the document and must remain unaltered on the document.

Third, the seal should go at the end or bottom of the document. As a general rule of construction, any information following a signature that is surplus, repugnant, or in contrast to the information above or preceding the signature, can be ignored or rejected. This is not a hard and fast rule and may be applied or ignored according to the circumstances. However, if the surveyor has reason to believe that a document may be altered or additional information inserted without the surveyor's review, the surveyor would be wise to affix the seal as near as possible to the end of the information.

CONCLUSION

In conclusion, the professional seal and use of the professional seal should not be dismissed or thought of lightly. The surveyor should review the licensing act and regulations to see why, when, and where the seal should be used. It may also prove beneficial to sit down at some point near the beginning of a surveyor's career and explain why, when, and where the professional seal is used. @

REFERENCES

1. *Duncan v. Missouri Bd. for Architects, Mo.App., 744 S.W.2d 524, 535 (1988)*
2. *Hamilton Ent., Ltd. v. South Park Land & Livestock Co., Inc., Colo.App., 527 P2d 886, 889 (1974)*
3. *South Park Land & Livestock Co., Inc. v. Hamilton Ent., Ltd., Colo., 538 P2d 444 (1974)*

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Looking Ahead...

2005

April

					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
			ALSA Education Seminar & Annual Meeting - Jasper AB			
24	25	26	27	28	29	30

May

1	2	3	4	5	6	7
8 Mother's Day	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23 Victoria Day	24	25	26	27	28
29	30	31				

June

			1	2 SLSA Education Seminar & Annual Meeting - S'toon, SK	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19 Father's Day	20	21	22	23	24 Deadline for Newsletter Submissions	25
			ACLS and APEILS AGM - Cardigan, PEI			
26	27	28	29	30		

July

					1 Canada Day	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

August

	1 Saskatchewan Day	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

September

				1	2	3
4	5 Labour Day	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30 Deadline for Newsletter Submissions	

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