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Summer 2007

No. 180



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THE NOVA SCOTIAN SURVEYOR

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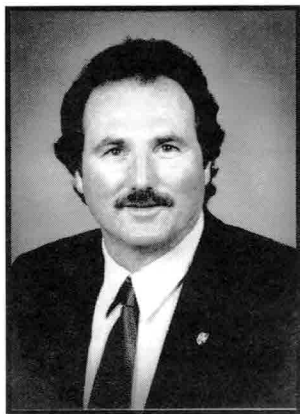
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PRESIDENT'S REPORT

Thomas F. Giovannetti, P.Eng, NSLS



This is my second report to the membership during my term as President. Following the 2006 AGM held in Wolfville, Council met on November 17, 2006, March 9 and June 8, 2007.

Council has dealt with two major housekeeping items, namely the MCE and SRD issues. It is my opinion that we have, within the confines of our legislation, effectively handled those members who did not comply with the MCE requirements by March 1, 2007. Following an advertisement for a Survey Review Department manager and a subsequent Request for Proposal, Council accepted the proposal from Gerry Bourbonniere, NSLS. In the next 18 months it is the goal of the association, with Gerry's assistance, to redefine / reshape the function of SRD.

It is my opinion, after travelling across the country, that continuing education and the review of work conducted by land surveyors is on the top of the list, along with labour mobility, a national Board of Examiners and a Futures Task Force that,

on a national level, advance the growth and prosperity of land surveying.

In the last issue of the "Surveyor", I reported that, according to the CCLS, the majority of members of survey associations are over 50 year of age. CCLS has advised that interprovincial mobility may be accelerated Canada-wide. In the past several months the British Columbia and Alberta governments have developed a Trades Industry Labour Mobility Agreement (TILMA) that could be a national initiative on inter-provincial labour mobility.

The Atlantic Provinces Board of Examiners for Land Surveyors (APBELS) scheduled a Colloquium on Educating the Next Generation of Land Surveyors in Atlantic Canada on April 20 and 21. The colloquium on education involving the four Atlantic Provinces was considered necessary by APBELS to address concerns specific to the Atlantic Provinces.

The four western provinces and the Association of Canada Lands Surveyors have joined the Canadian Board of Examiners for Professional Surveyors (CBEPS). Our association as well as other associations have been invited to join. It is my understanding that Ontario and Quebec are very close to joining or have accepted the invitation to join CBEPS.

I have been asked by the Atlantic Board to request that CBEPS provide a presentation at our next AGM. It is my understanding that the other Atlantic Provinces have requested similar presentations. I attended one at the PEI Association's AGM last month.

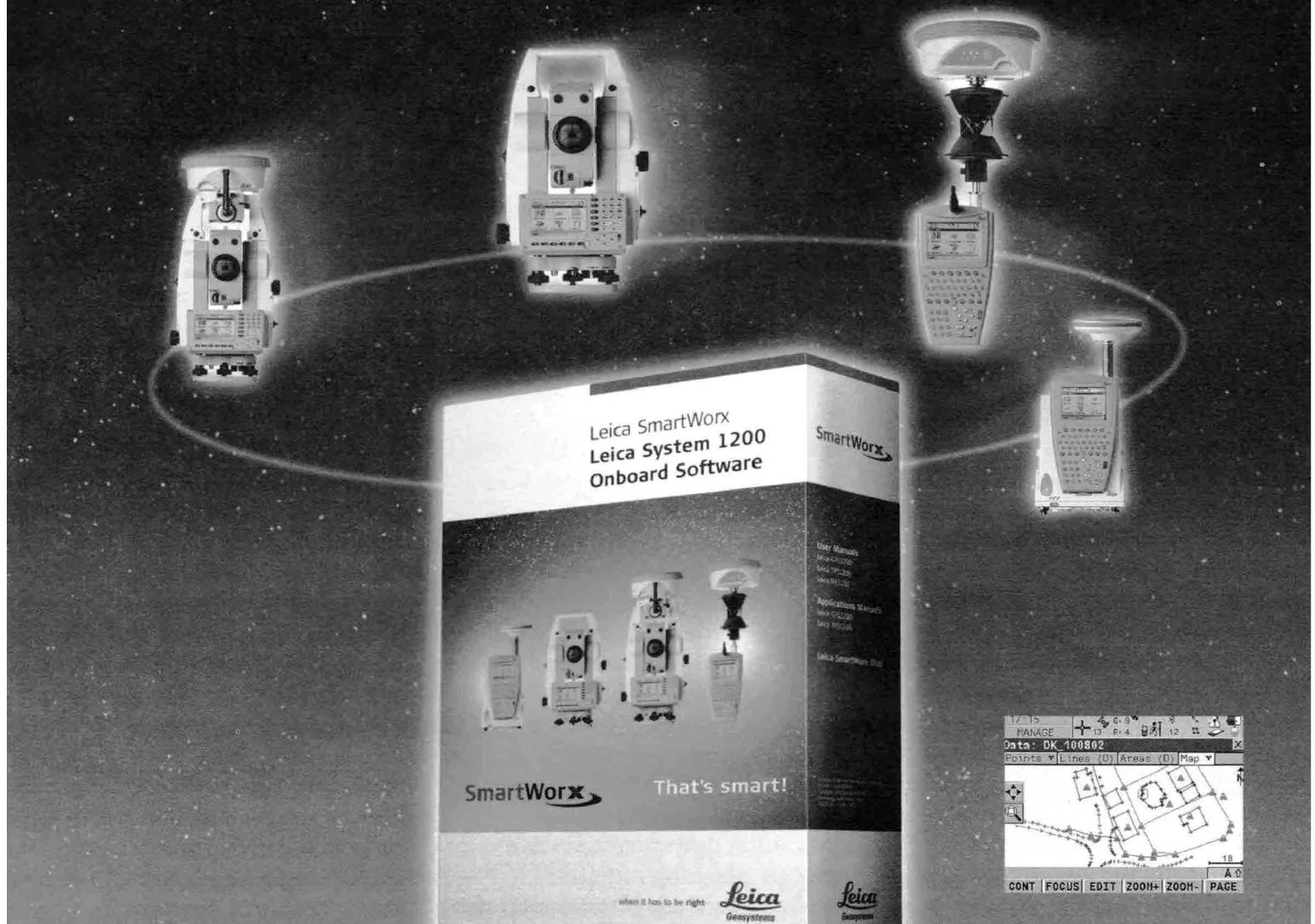
In both my travels and Russell MacKinnon's travels across the country, we have become increasingly aware of how fortunate our association is in that we have continued access to the Nova Scotia Legislature and the provincial Caucuses. I have heard these comments from presidents and past presidents of other provincial associations who wish to accelerate this process in their provinces. In our own province, Russell MacKinnon, NSLS, has continued to monitor bills being presented in the Legislature to ensure there is no conflict with our statute. This monitoring resulted in both Fred Hutchinson's and my presence before the Law Amendments Committee regarding an amendment to the Environment Act in relation to the delineation of wetlands.

Russell MacKinnon and our CCLS Director / Councillor, Jim Gunn, have, on a national level showcased Nova Scotia's level of expertise in the profession.

Jim, as the Chair of the AGM Committee, has reported to me that the planning of the

Continued on page 4

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Continued from page 2

convention is well underway with plenty of enthusiasm. Members in each Zone should be proud of the fact that, as Nova Scotia Land Surveyors, we can showcase the uniqueness and diversity of our heritage.

With that said, we, as Nova Scotia Land Surveyors, should also appreciate the uniqueness and diversity of our heritage in the manner in which we practice land surveying for the public good. It is my opinion that, in the next several years, Nova Scotia Land Surveyors will be faced with national issues such as labour mobility and a national Board of Examiners. Our strength as the Association of Nova Scotia Land Surveyors is in each and every member.

Our voices as Nova Scotia Land Surveyors will and can be heard and respected by others through the manner we present ourselves and our Association to the public and the government. The profession of land surveying will also be strengthened on a national level with a better affiliation of provincial associations that can be heard as one unified voice to address national issues. Times are changing and we must act and work together for the governance of our association within the future national, and possibly international, demands of labour mobility that may be dictated by the provincial and federal governments.

Failure for us to work together as an association will render us weak and vulnerable. The ero-

sion of our service has been in progression for some time. However, our presentation to the provincial Caucuses by Russell MacKinnon, Bruce Mahar and Derik DeWolfe regarding the LRA is a good example of how we can work together and communicate effectively with the government for the protection of the public and to further our profession.

My last Council meeting as President is around the corner just prior to our AGM. The pressing issues that Council faced at the beginning of my tenure are almost at rest and have been dealt with in an efficient manner by staff and Council. In this last quarter as President, it is my wish to instill in our membership the willingness to cooperate with each other for the benefit of the profession. It is my hope that we will be able to hammer out some important business at our next AGM. In the future there will be increasing financial demands on our association due to national and strategic planning initiatives. The decline in our membership will create a shortfall in the cash flow we need to survive as an Association.

I have given much consideration to this fact and have listened to other association presidents across the country. Many of us agree with the user-pay concept rather than increasing membership dues. One example of user-pay is to increase the cost of the SRD sticker for each plan on the basis of the number of lots shown on the plan. Why should someone pay the same price for a sticker for a 2-lot subdivision as a 20-lot subdivi-

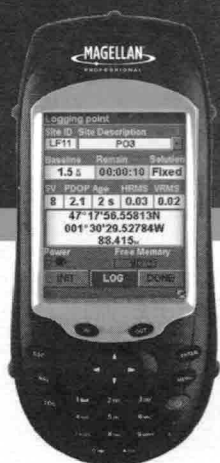
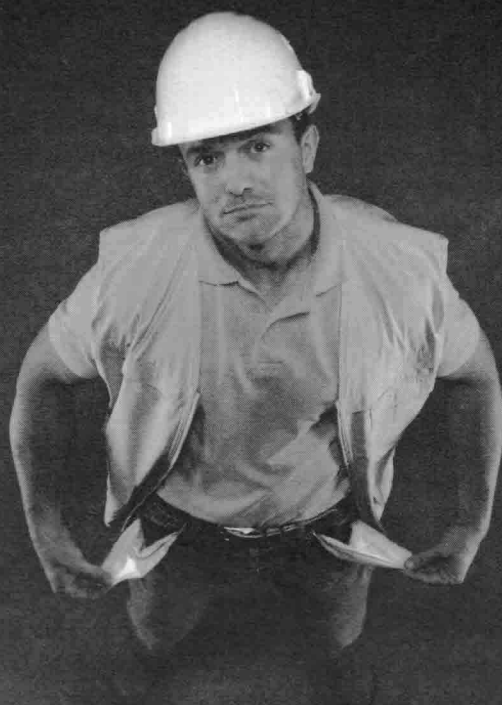
sion plan? This process of user-pay could increase the SRD revenue. The benefit of this type of fee schedule is fundamental in that it will not cause members to retire as would an increase in dues. This could be a Catch-22 situation as dues revenue decreases as members retire, which could lead to subsequent dues increases. There are other methods to create revenue for the association that can be passed on to users and clients. The philosophy of user-pay appears to make good sense from an association business planning perspective.

I can tell you that Council has been very busy dealing with old and new issues. Fred Hutchinson, Kathy Alcorn, Cathy McInnis and Gerry Bourbonniere will be kept very busy in conducting Association business, service to the public and to the members. We are fortunate to have a dedicated staff who continue to serve us well. Our past president, Garry Parker, now chair of the ARC, has been successful in dealing with the issues that have presented themselves this year.

In any event, despite the wet weather in June, our summer season has started. Now that we are busy, some of us may not be able to relax in the sun or play golf. It seems like it is time to make hay if the sun will ever shine. In closing, I wish all of the members a safe and productive summer – be it at the office, at the beach, golfing or in the field.

Please remember to reserve your room at Keltic Lodge for the AGM. See you there! ❧

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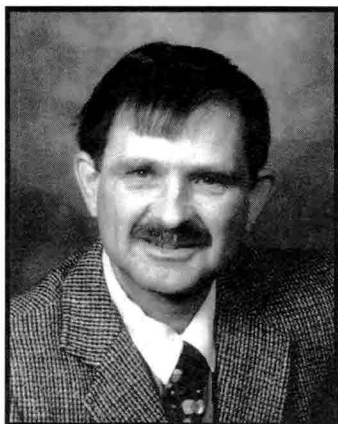


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EXECUTIVE DIRECTOR'S REPORT

F.C. Hutchinson, BA, NSLS, CLS



I begin this report to the members by announcing that the position of manager of the Survey Review Department has been filled. Council reviewed several proposals and decided to accept the proposal from Gerry Bourbonniere, NSLS. He will be working for the Association again starting July 3, 2007. Part of Gerry's mandate is to consult with the membership, both personally and at zone meetings, to gather opinions and ideas for the future of the department. This activity fits well with the objectives of the Strategic Planning Committee.

Members can expect that reviews of their plans may be supported by a field inspection. The resulting report will give consideration to evidence, cultural features, cut lines, cartographic techniques and overall compliance with regulations. The Survey Review Department appreciates the cooperation that members have extended over the past year in dealing with submissions and payments. Your continued support of this peer review activity illustrates due diligence on the part of the Association in an effort to protect the public and advance the profession as per the objects of the Land Surveyors Act.

Service Nova Scotia and Municipal Relations has been busy scanning registry documents including plans. Deeds, mortgages and plans are now becoming available online for those individuals who have a subscription for Property Online. It will be interesting to discuss the merits of these online products with members in the months to come. Some may view it as the best thing since sliced bread while others might consider online access a blight on their business activity.

The Association has recently leased the downstairs office to a new tenant. It is a management business with four employees, two of whom are in the office most of the time while the others tend to meet clients offsite. A 12-month lease has been signed, with occupancy starting on June 15, 2007. Everything seems to be working out between landlord and tenant.

The 57th Annual General Meeting will be held at Keltic Lodge, Middle Head Peninsula, Ingonish Beach, Nova Scotia from October 11 - 13, 2007. Members and guests are encouraged to phone 1-800-565-0444 to make reservations. A golf tournament is planned for Thursday so be sure to bring your clubs or rent a set from the pro shop. A continuing education seminar is slated for Friday morning with the proposed topic of "Watercourses and Wetlands". The official opening of the meeting will get underway after lunch on Friday.

This island venue is a good drive for most mainlanders so it is best to make travel plans to ensure that you will arrive with enough time to get settled in. The final leg of your journey to the Lodge will

have you climbing 1200 feet in elevation over Cape Smokey and down the other side if you travel the east side of the Island. You will need all the power and brakes that your vehicle has left.

I personally plan to arrive early so that I can get in a practice round of golf. I have been told that it might help and I need all the help I can get. The only good thing about my game is that I generally get my money's worth if you place a price tag on each swing. Look for your registration package in late August. Take care one and all.

Surveyors are reminded that it is important to illustrate wetlands and watercourses on plans of survey or subdivision. These features can have a serious impact on both the market value and functionality of the properties under survey. Rural properties that are subject to the onsite services of a well and septic system require that these hydrological features be considered. The placement of driveways, buildings and onsite service can be severely restricted by such features. The land surveyor may think that their job is merely to define boundaries but from the public's perspective, a valuable building lot is created or defined by the survey plan.

The other area of concern for surveyors is floodplains. This can be an issue during the subdivision development stage or an item that needs to be addressed when positioning a structure on an existing parcel of land. It is recommended to consult with local residents or the municipality about historical water levels when setting building grades near watercourses. ■

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Professional Development - The Never Ending Story

by Paul A. Cuomo, LS

As seen online at www.TheAmericaSurveyor.com. The American Surveyor, Vol. 4, No. 1, January/February 2007.

What do the following situations all have in common: going to church on Sunday just to meet girls, being nice to your aunt so she puts you in her will, Anna Nicole Smith's last marriage, and supporting "Mandatory Professional Development" because it will increase membership in your State Association? Let's try "Doing the right thing for the wrong reason" for starters.

Professional development and continuing education go hand in hand. The reason that any profession is committed to continuing education is to ensure that the public's health, safety and welfare are protected. The concept of granting Professional Development Units (PDUs) for attending chapter meetings is not serving the public's interest. It is entirely self-serving on the association's part. I have attended many "knife and fork club" meetings billed as "chapter meetings". The food was good, the beer was cold and I heard a slew of new jokes. How many points was that worth?

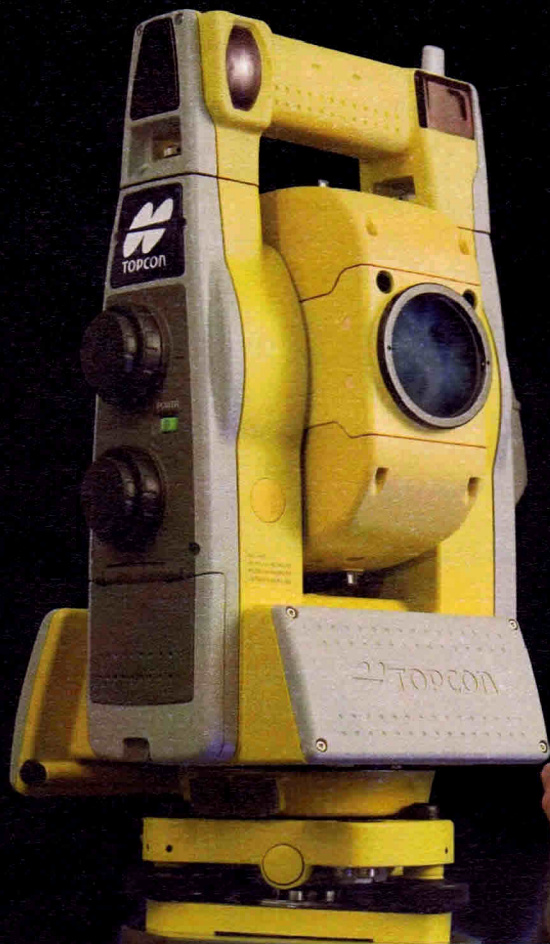
Many states offer continuing education workshops periodically and at their annual meetings. I've been involved as a speaker at six or eight of these meetings, presenting one- or two-day workshops on various boundary and PLSS-related subjects and have been pleasantly surprised at the attitude of the audiences. These workshops were considered "mandatory" and were very well attended. The surveyors seemed genuinely glad to be there and vigorously participated in the workshop discussions. A few actually admitted that they learned something. Prior to this experience I was on the fence regarding the "mandatory" part. As an educator and presenter of seminars, I am constantly being accused of wanting to "feather my own nest" every time I speak in support of the concept, but as a Professional Land Surveyor I also have a working knowledge of the benefits derived by attending well presented, meaningful seminars and workshops on practical and useful subjects.

Every time surveyors attend a workshop, there is a potential benefit to the public or to their clients. The surveyor may learn how to get a project approved more quickly or at a lesser cost, to use a piece of new equipment more efficiently thereby saving time and money by doing a project more accurately and quickly, to prepare an ALTA map so that the lender's attorney and the title company don't bleed all over it, to become more familiar with the laws that affect the practice of surveying, to become familiar with photogrammetric mapping so that he or she can advise the client when it is efficient to fly or not to fly a job, to have the fundamental boundary principles reaffirmed so that his or her survey does not "create chaos in the neighborhood", and to learn how to speak and dress in a manner that his or her presentation before the Planning Commission or in court doesn't come off like the Three Stooges rolled into one.

Every time surveyors attend a workshop there are potential benefits. A surveyor may learn how to best serve a client and get that "warm and fuzzy" feeling that comes with getting paid or getting that next big job, to be a better surveyor and to be more valuable to the public, to become more careful and diligent doing boundary surveys and staying out of court, to become familiar with the US Public Lands Survey System and get that boundary properly located and recorded, and perhaps to gain some knowledge and confidence to be able to venture into some aspect of surveying not tried before.

Besides the normal technical and legal seminars presented, a good Continuing Education program should contain subjects such as project management, business practice, contract law, people skills and ethics. As Conference Program Chairman for my association I had tried to put this type of workshop on several

Continued on page 12



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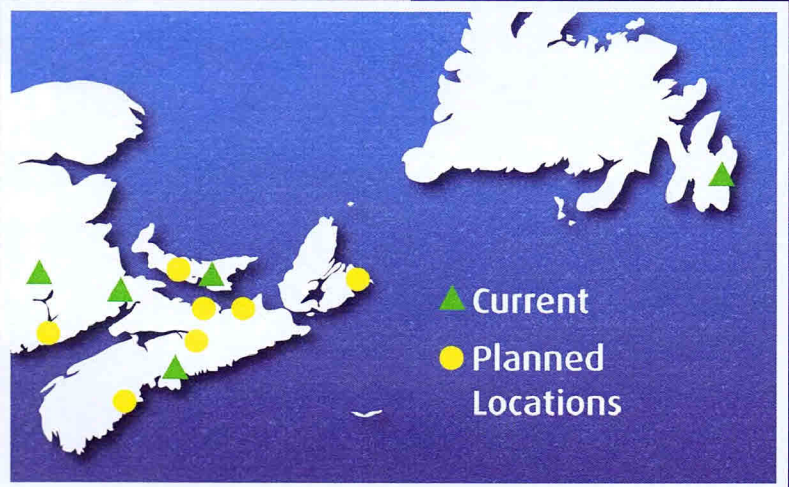
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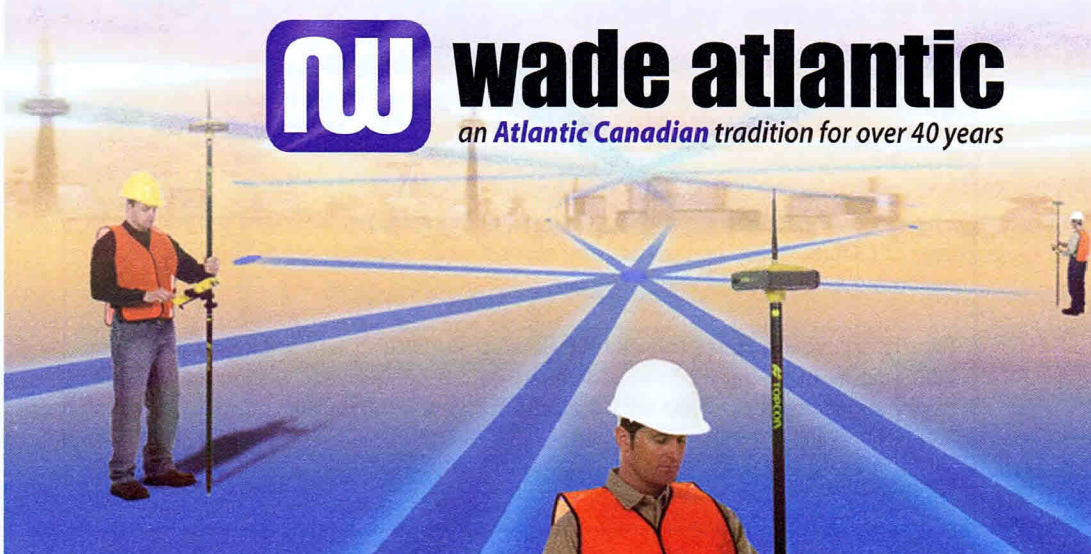
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times and found little interest for them among the profession. Perhaps as part of an overall mandatory program these valuable workshops might be better attended.

Will a mandatory continuing education program eliminate the poor practice and incompetence of some practitioners plaguing the surveying profession? That remains to be seen. It is apparent that such a program will help some "cross over the line", but what effect it will have on the "hardcore unprofessional" is a crap shoot.

Eventually you are going to be faced with voting to support the concept of mandatory continuing education and professional development credits. Vote yes, but for the right reasons.

.....

Paul Cuomo is President and owner of both Pacific Land Seminars, Inc., and Paul Cuomo Press, Inc. Licensed in California since 1973, he currently serves as a boundary consultant, instructor and expert witness. He has authored and co-authored numerous surveying publications.

2007 COGS Award Winners

This year's recipients of the prizes awarded annually by ANSLS to deserving students at COGS are:

G.T. BATES SCHOLARSHIP

For attaining highest standing
in the
Survey Technician Program
was awarded to
DEVIN GALE

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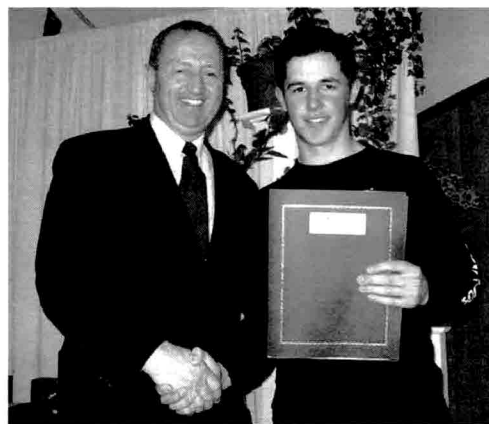
For best kept field book
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For showing the most
progress in the
Survey Technician Program
was awarded to
KYLE HEADDY

Congratulations!

Russell MacKinnon, ANSLS vice-president, presents Devin Gale with one of his awards



We received this letter from Devin Gale:

May 12, 2007

Thank you very much for your contribution to the Centre of Geographic Sciences. I am the recipient of the G.T. Bates Scholarship and the J.E.R. March Award.

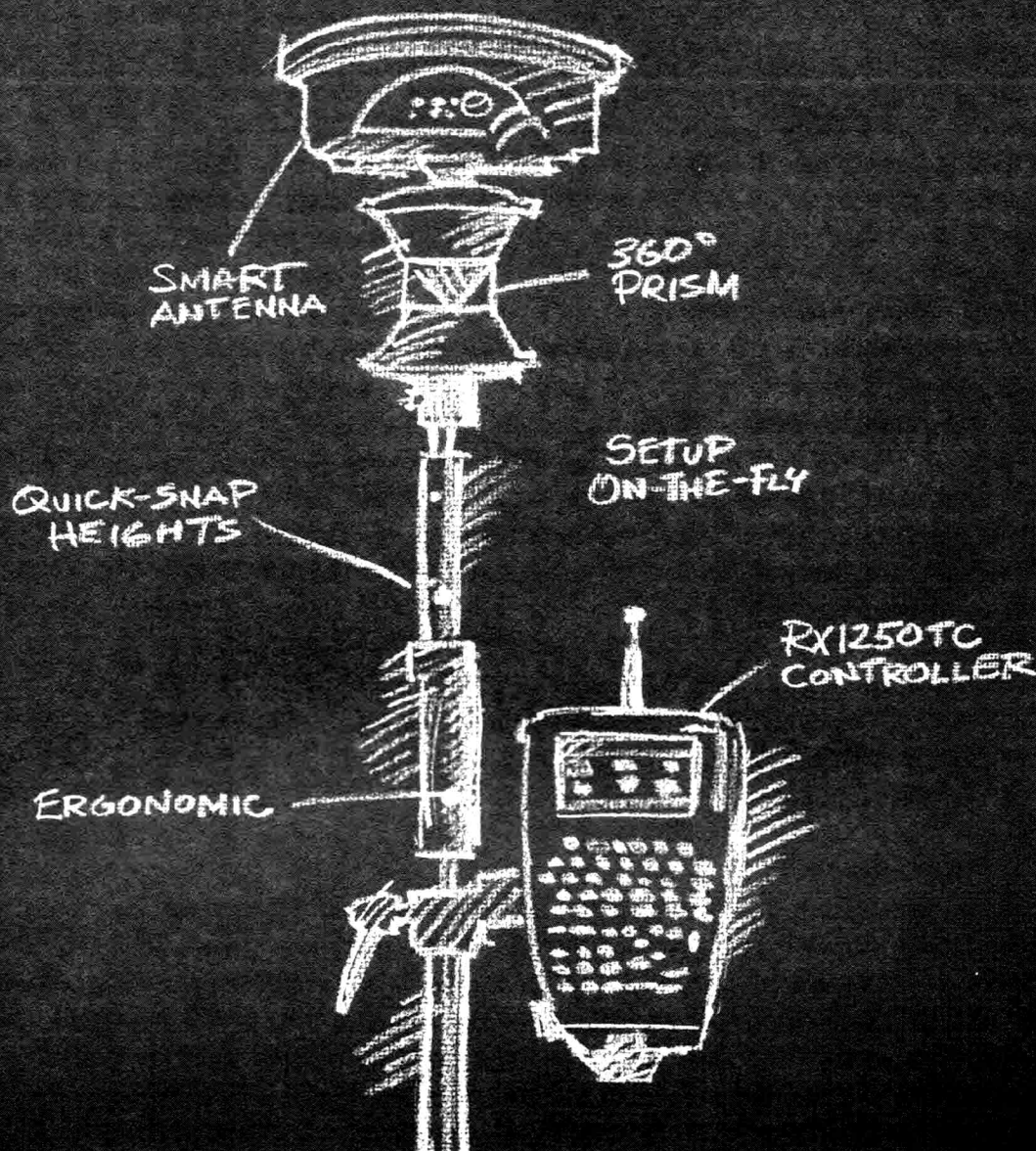
I am from Chester, Nova Scotia where I attended Forest Heights Community School. My math and physics teachers encouraged me to start a career in Geomatics. I decided to enroll in the Survey Technician program at COGS because I enjoyed the outdoors and always excelled in math.

I have already enrolled in the Geomatics Engineering Technologist program next year at COGS. After completing my second year, I plan on attending UNB and becoming a registered Land Surveyor.

I really appreciate your generous scholarship support. It will greatly help me next year by allowing me to concentrate more on schoolwork without having to worry about finances. I am very thankful for your contribution.

Devin Gale

What makes one pole smarter than another?



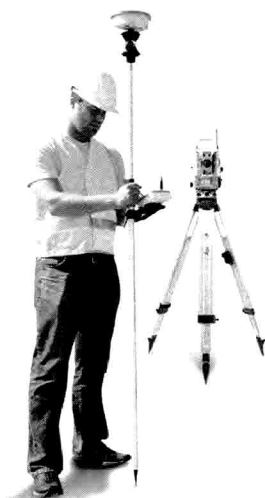
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Surveying Equipment Theft

by Bryan Baker

As seen online at www.TheAmericaSurveyor.com. The American Surveyor, Vol. 3, No. 2, March/April 2006.

Too many surveyors have had the painful experience of equipment theft at some point in their career, sometimes more than once. While no part of the U.S. is immune to these thefts, some areas are prone to more thefts than others.

A company security policy is the first step to helping keep your company from becoming a victim. A comprehensive policy should include three major areas: office, vehicle and jobsite. These are the three primary locations where theft of surveying equipment occurs.

Office break-ins seem to be on the rise. A fleet of surveying trucks parked outside an otherwise overnight vacant office building is a billboard for would-be thieves, advertising that there may be a bunch of expensive equipment, computers, radios and other tools inside the office, and possibly in the trucks as well.

Trucks are broken into at the office, on the jobsite and even at restaurants in the middle of the day, usually because they look the same as many construction company trucks. Company logos on the side of the vehicles and the brightly colored plastic cases advertise expensive equipment. Many thieves are on the lookout for power tools that can easily be pawned at the nearest pawn shop.

It used to be that roadside thefts were usually limited to backsight prism setups. Now with robotic total stations and GPS, tens of thousand of dollars worth of equipment is left unattended on tripods in some very conspicuous locations. As a result, the cost of these thefts to the industry in the form of lost productivity, insurance premiums and replacement costs is increasing. The good news is, there are a number of ways surveyors can help minimize the risk of loss from theft.

Office

There are many different styles of surveying offices. Regardless of the style, the first and foremost rule is to have a good alarm system. These systems are not very expensive to have installed and maintained. Generally, many insurances companies have a rate reduction that will help offset the monthly fee of these systems. Change the access code on regular basis and every time there is employee turnover. If practical, limit access to the alarm system.

Store field equipment in a lockable, windowless room that does not have an outside entrance. Many companies have a room similar to this where batteries are charged or data is downloaded by the field crews.

Office computers are a bit more problematic. Hopefully, the blaring siren of an alarm system will send would-be thieves away before any computers, printers or plotters are stolen, however, storing a central server in a lockable, windowless closet ensures that even if the office computers are stolen, the data will be safe. (This is assuming, of course, that data is backed up on a regular basis.)

Vehicle

A secure vehicle is essential. Again, a good alarm system is an inexpensive deterrent to most thieves. Vehicle tracking systems are fairly inexpensive and will help only in those cases where the entire vehicle is stolen. Some are now factory installed. There are even some low cost systems used by construction companies for dispatching purposes that could be utilized for theft protection as well as dispatching, and customer billing.

Beyond alarms and tracking systems, the options get a bit more vehicle dependent. The least effective protection is a standard fiberglass or aluminum

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topper. While inexpensive and stylish, you get what you pay for in terms of equipment protection. Most of these, even when locked, can usually be pried open with a screwdriver. Most are also not integrated with the alarm system. Finally, the big windows on most toppers act like display windows for thieves to select from the variety of equipment housed inside. A high-quality windowless steel topper with a good locking system offers the best deterrence to roving eyes. Removable magnetic signs that can be taken off at night will minimize the advertising that expensive equipment might be inside the vehicle.

Do not make the mistake in thinking that keeping equipment inside the cab is more secure. Windows are easily smashed and cases quickly grabbed. Take valuable instruments in the office every evening. If crews take trucks home in the evenings, demand that they remove the instruments and take them into their residences. Likewise, instruct crews that travel to take equipment into their hotel rooms at night for security. Many insurance companies will not cover a theft if it occurs overnight from the vehicle at a residence or hotel. Check the fine print on your policy for the specific terms as they relate to this matter.

Jobsite

This is the most difficult location to prevent equipment theft, especially since more and more expensive equipment is left unattended for extended periods of time. There are some inexpensive things that you can do to deter thieves for equipment in the field.

Try to put expensive GPS base stations and robotic total stations in lesser traveled areas.

I often see thousands of dollars worth of equipment sitting beside heavily-traveled roads with no visibility to any company employee. While sometimes there is no avoiding this scenario, most systems, certainly GPS base stations, do not require actually occupying a heavily-traveled control point. Check with your local trainer if you are not familiar with these unknown point techniques. At least with robotic total stations, you have to be within visible range to be using the equipment. Covering a quarter mile or

more (even at Olympic speeds) makes it difficult to get a license plate number, much less stop someone from pulling over, gathering up a tripod, throwing it in the back of a truck and speeding away.

Most thieves do not know what they are stealing when they take equipment from the roadside. All they know is that it looks expensive, there is nobody around, and they can at least use the car battery that is powering the system.

Putting up a lath and flagging "triangle" around a base can be a surprising visual deterrent. It gives a type of "mine field" illusion to the area. For a few dollars, you can purchase a ground screw used for dog chains, a heavy chain and a padlock. Chain one leg of the tripod to the screw in the ground. This only takes a couple of minutes, and most thieves probably don't know how to get the equipment off the tripod. If you are continuously working on multiple jobsites, purchase multiple screws and leave them in the ground at your control points until you are finished with the project. If done correctly, this can also keep your equipment from blowing over in high winds.

Locking metal tool boxes are another good deterrent but they are heavy and you have to be careful about equipment, especially radio modems, overheating during the warm months. Leaving another vehicle in the immediate vicinity is another good deterrent but it can become a victim itself. I know some people that leave the equipment locked in the vehicle with the antenna cables running through a partially rolled-down window.

It is a sad fact that some equipment is stolen by company employees. They know that in many cases a GPS system or robotic total station is worth more than their annual salaries. They may also have connections with other surveyors who are willing to overlook the fact that they are getting too good of a deal. Fabricating a story of theft is very simple for a dishonest employee out in the field all day without supervision. While it is hard enough to get good help as it is, employers should have a background check performed on all company personnel (not just field crews) as a matter of company policy. This process can cost a couple hundred dollars but can provide red flags to those employees with a history of money

problems that might be tempted to steal from their employers.

Equipment

It is crucial to maintain a complete inventory with the serial numbers of all equipment assigned to each field crew. This is also just good business practice. With the exception of cables and batteries, most all surveying equipment has serial numbers on it. Most computerized equipment such as GPS receivers, radio modems and total stations have a serial number encoded in the internal computer. Manufacturers' serial number tags and company labels are easy to remove or cover over. Engrave or brand your company name and number on the equipment. Photograph all equipment associated with each crew. Make sure your insurance company has copies of these records and is updated on an as-needed basis.

Having a security policy in place using some of these suggestions for your firm will help reduce the chance of being victimized. In the unfortunate event that you are a victim of a theft, provide your local instrument dealers (not just the one you purchased it from, and not just the one that represents that manufacturer) with copies of the information. Most dealers I know are happy to cooperate with you and each other to help retrieve stolen equipment. Most manufacturers can flag a stolen serial number so that if it turns up at another service center, it can be tracked back to the original owner.

Insurance

Check with your local insurance professional regarding coverage for your equipment. After a loss is no time to find out that the fine print you didn't read on your policy excludes your particular circumstances. Ask the agent the hard and direct questions. Ask him to show you the clause that covers your question. Do not accept his word that you are covered for specific instances of loss. If it is not explicitly spelled out in the policy as covered, it is not. You may pay a bit more for some explicit coverages including valuable equipment, and out of town use. Use a reputable insurance company. Being covered is of little use if the insurance company drags its feet or disputes every aspect of your claim.

Recovery

Recovery of stolen equipment, if it happens at all, can take a very long time. It is much better to try to prevent the theft in the first place. You can also help in the recovery of stolen equipment. If you are approached by a private party to purchase surveying equipment, check with local dealers of that brand of equipment. Have the local dealer inspect the equipment. There will probably be some nominal fee for their time to do this but this gives the dealer access to the serial numbers of the equipment, and makes it possible to run it by the manufacturer and verify the seller's account of the equipment ownership. There are also some telltale signs of stolen systems: incomplete systems such as GPS base stations without any rover equipment, and robotic total stations without the rover accessories. Beware of new equipment and accessories. These might have actually been stolen from an instrument dealer.

Be careful of equipment purchased through online auction companies, as a lot of stolen equipment ends up there. Same rules apply to those purchases. If it is a large purchase, run the funds through www.escrow.com. This allows the purchaser an inspection period after receiving the merchandise without the seller getting his or her hands on the money.

Conclusion

Equipment theft is a growing problem worldwide. Be proactive. Construct a plan to deal with the loss of equipment either through a backup system or with rental equipment. Make it every employee's job to prevent theft and loss and hopefully, you won't be the one returning to your survey truck only to find a pile of broken glass. In the words of our old statesman, Ben Franklin, "An ounce of prevention is worth a pound of cure."

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Bryan Baker is the sales manager for Frontier Precision, Inc., a Trimble instrument dealer in Denver. Over the past 20 years he has helped recover more than \$250,000 in stolen survey equipment.



Rules of the Game: Parallels with Forensic Investigations

by Donald A Wilson, LLS, PLS, RPF

As seen online in The Professional Surveyor, May 2007, Volume 27, Number 5.

With the proliferation of crime shows on the television networks these days, the general public has gained an understanding and an appreciation of what criminal investigators do, even though they get it "Hollywood style". Along with the stories comes appropriate terminology and jargon, things like ballistics, blood spatter, tire patterns and DNA evidence. What the average person probably never considers is how similar any other type of investigation might be. And likely the average retracement surveyor does not think twice about how many of these types of things he or she routinely does, perhaps with different labels or known by different names, and certainly for a different purpose.

Evidence collection, scene protection and processing, paperwork and photography are important procedures regardless of the type of investigation being conducted. Survey evidence does not make big news, but murder investigation generally hits the front page and the evening news, some becoming best-selling novels and television or movie hits.

Scene of the Crime vs. Crime Scene

The scene of the crime and the crime scene are not the same. The scene of the crime is the place where the crime actually took place, whereas the crime scene may be anything and everything that relates to the scene of the crime. A crime

scene is not only the actual location of the crime, it is also all the other areas that relate to it. For example, the total crime scene for a modern day crime might include international considerations as well as dozens of physical locations and individuals, hundreds if not thousands of exhibits and many witness statements.

Consider a homicide where the victim was slain in his or her home, the site cleaned up and the body disposed of in a remote location. Then the murder weapon was disposed of at a different time at an entirely different location. The scene of the crime is the home, but the crime scene includes at the very least the locations of the body and the weapon and may include much more, depending on what might be uncovered in the investigation.

Now consider a property retracement survey. How many scenes are involved in addition to the physical site of the property? At the least, the abutting properties and their surveys, the chains of title with their descriptors, testimony of former owners and other knowledgeable individuals, related properties sequentially or simultaneously created, conflicts of evidence and highway records are all involved, along with perhaps many more. Potentially many other scenes in addition to the physical site are routinely part of a survey investigation.

Scene Reconstruction

Crime scene reconstruction includes scientific scene analysis, interpretation of scene pattern evidence and laboratory examination of physical evidence. It also involves systematic study of related information and the logical development of a theory. Property study and retracement is a close parallel in that the site is analyzed from its appearance and the interpretation of existing evidence of location and occupation. Related information in the form of title documents and elements are a necessity, while peripheral information in the form of previous surveys, abutting surveys, highway and other utility information and related information is often helpful, and sometimes necessary. Generally a theory is developed as to how the title and boundaries were first established and how either may have changed since their origins. Conclusions are drawn based on whether the evidence supports the theory of what the property is or looks like.

Scene Protection

The investigation of the scene of the crime is usually protected by surrounding it with yellow crime scene tape, so it is not contaminated or, as they say, compromised. Most property boundary scenes have already been compromised, some long ago, before the retracement investigator arrives. However, that does not preclude protection to

prevent further destruction of the scene and its evidence. At the site, corner markers may have been moved, destroyed, deteriorated and otherwise compromised. Even as far away as the county court house or other repository, relevant records may be altered, stolen or destroyed.

Evidence Collection and Preservation

While paint fragments, spent cartridges and other types of physical evidence may be collected from a crime scene for later comparison and analysis or even for presentation in court, the retracement surveyor does not have such luxury. Corner trees, yards of fencing material and physical corner monumentation cannot be removed from their locations. Sometimes samples may be procured, but for the most part evidence must be left as found and intact. However, all such evidence can be located through the survey measurement process, photographed and later depicted on a diagram generally known as a survey plan or plat. And hopefully a return to the scene can be made at a later date to find all, or at least some, of that evidence still in place. There is usually no such thing with a crime scene, as it must be cleaned up and most items of evidence either removed or at least filed elsewhere for future reference.

Trace Evidence

We hear of trace evidence and immediately think of gunshot residue, wood splinters, glass fragments, paint chips, hairs and fibers. Retracement surveyors are often looking for wood fragments to identify the remains of a wood stake or post, stump holes where a corner

tree or a bearing tree once stood, or soil discoloration from rusted metal objects or rotted-away wood. Remains of fences long fallen down and deteriorated are frequently important pieces of evidence in the location of property boundaries. Paint flecks and remnants of flagging tape may indicate the presence of a marker or the place where one once stood.

Photographs

Few crime scenes are ever investigated without an abundance of photographs being taken to preserve the condition of the scene and its contents. Out of necessity, bodies must be moved within a short time, and it does not take long after the initial investigation for a scene to look entirely different from when it was discovered. Retracement surveyors should consider that their scene may change as well. People have been known to alter or destroy evidence, severe weather and other earth processes sometimes change the character of a site and the development process for the installation of improvements can also cause changes. Soil testing and other types of construction can alter a site to where it is unrecognizable from what the observer initially saw. If the court were to visit a site long after the retracement was done or the survey was finished, the scene might look entirely different from the way the surveyor described it from his or her recollection. Photographs will aid in fixing a scene at a point in time.

Scientific Analysis

Much of the evidence in a criminal investigation becomes the subject of testing. Fingerprint and DNA

comparisons, ballistics testing and chemical tests all comprise a series of processes necessary to arrive at proper conclusions. Boundary evidence may also be subject to tests for wood fragment identification, aging of trees and other wooden evidence, soil testing, fence wire identification and comparison and mathematical analyses of the current survey and past measurements.

Interrogation / Interview of Witnesses

Generally a number of witnesses are interrogated or interviewed in the criminal investigation process. Concerning land ownership and location, knowledgeable persons are contacted to inquire of unrecorded documents, recollections of the location of boundary markers and the use of the property. Some may become witnesses if litigation ensues to corroborate other testimony or conclusions. Former owners, abutting landowners, visitors, record keepers and others familiar with a land parcel may be potential sources of valuable information.

Profiling

To successfully retrace an earlier surveyor means learning about the individual and his or her habits. The type of equipment used, measurement techniques, allowances for error and type of monumentation the surveyor sets all factor into following the individual's footsteps. The successful retracement surveyor learns the previous surveyor's idiosyncrasies, habits, preferences and procedures.

Serial killers are sometimes caught using profiling techniques, and crime patterns can often be recognized for certain perpetrators. The same is true for surveyors following certain set procedures and becoming creatures of habit for the sake of efficiency and consistency. Any surveyor having practiced in an area for a period of time becomes familiar with the earlier surveyors they are following as they begin to recognize consistency in the type of monumentation set, the way trees are marked, certain notations in field books and on plans, as well as equipment and procedures used.

The procedures used in a criminal investigation and other types of investigation are often very similar, or even the same, although sometimes known by different names. Since they are all part of forensics of interest to the legal system, all need to be performed correctly, consistently, objectively and with concern for keeping within the law and in protecting people's rights. There are rules for each, some written and others unwritten. The rules for any investigation include protecting and processing the scene, preserving the evidence and proper procedures for analysis, reporting and presentation, whether

the situation is a major crime scene or a simple lot survey.

Don Wilson is president of Land & Boundary Consultants, Inc.; and part owner of and the lead instructor in Surveyors Education Seminars, a member of the Professional Surveyor / Red Vector Dream Team providing online courses for continuing education; and a regular instructor in the University of New Hampshire Continuing Education System for 25 years. He is also co-author of several well-known texts.

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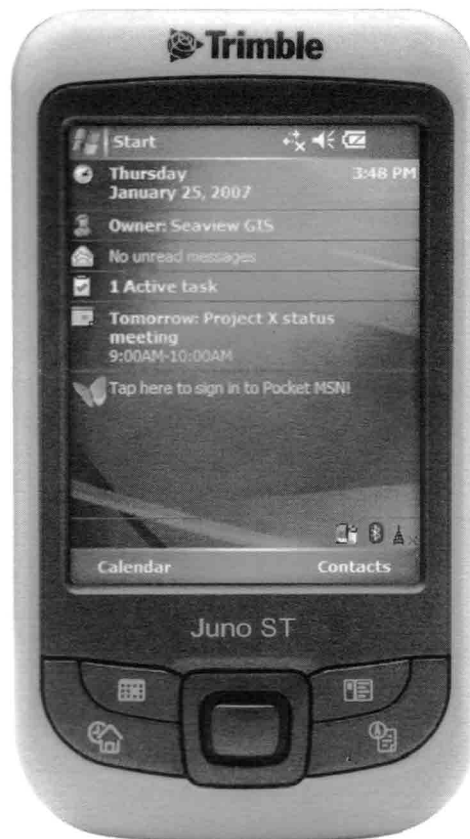
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