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contents

ON THE COVER

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features

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departments

in this issue

thought leader

The Secret Society: The Way I Remember It

I was rummaging through the garage a few days ago and discovered a buckled-up package that looked like a film canister. Sure enough it was the second copy in existence of "A Matter of Degrees", a 16mm sound film about surveyors produced in 1986. This took me back to those thrilling days of yore and the startup of the National Society of Professional Surveyors (NSPS).

This rube from western Colorado, a PLSC Director was given the position of Colorado representative for the Board of Governors (BOG) of the newly formed NSPS. This was the member organization of the American Congress of Surveying and Mapping (ACSM) that replaced the Land Surveys Division. Up to then ACSM was generally a beltway outfit with many government and other public sector members (read academia). The takeover by the private sector had begun about 1980-81. It wasn't hostile just a catch up to current times.

The private sector longed for some recognition and more public exposure. They knew their importance to society but it seemed that nobody else did. The BOG was formed to give the state affiliates like NMPS, PLSC etc. a voice at the national level, a very good idea. The NSPS Board would then hear from BOG and act on their proposals or refer it up to the ACSM board. NSPS people sat on ACSM on a rotating basis one would become overall president every third year. Now before you get acronym sickness from all these initials it was all a response to surveyors wanting a bigger piece of the pie and be more publicly recognized.

> "What have you been doing to enhance the profession outside your little secret society?"

As my public career moved up the ladder from BOG, to area Director, vice president and eventually president of NSPS the private sector was in firm control. However the old nagging feeling of being ignored by society was still festering.

Low and behold some forward thinking state affiliates like Texas and Pennsylvania had produced films about surveying and pretty good ones at that. Why shouldn't NSPS do one?

Well, we did. After two years of hard work by executive director Anne Glasgow and Area director Ron Carruth and several directors plus the infusion of a year's budget and many private donations it was done. Premiered at the Alaska Fall Convention in 1986 it was a huge hit, also a finalist in the cable Ace Awards for short films.

The idea was to get a product in surveyor's hands to take out to the public and show what we were really about. It was not technical in nature but in 28 minutes viewers could come away with a new appreciation for what we do, where we have been and where we were going. We were real proud of it.

Two big problems then occurred. NSPS failed in the large distribution of copies. Frankly, we were tapped out. Okay our bad. The bigger thing however was the lack of use by its intended recipients, the very surveyors that clamored for the film to begin with.

Moving forward, sound films are quite archaic but the need is still there.

The whole point of this story is: what have you been doing to enhance the profession outside of your little secret society? What members of the general public, mainly

continued on page 38

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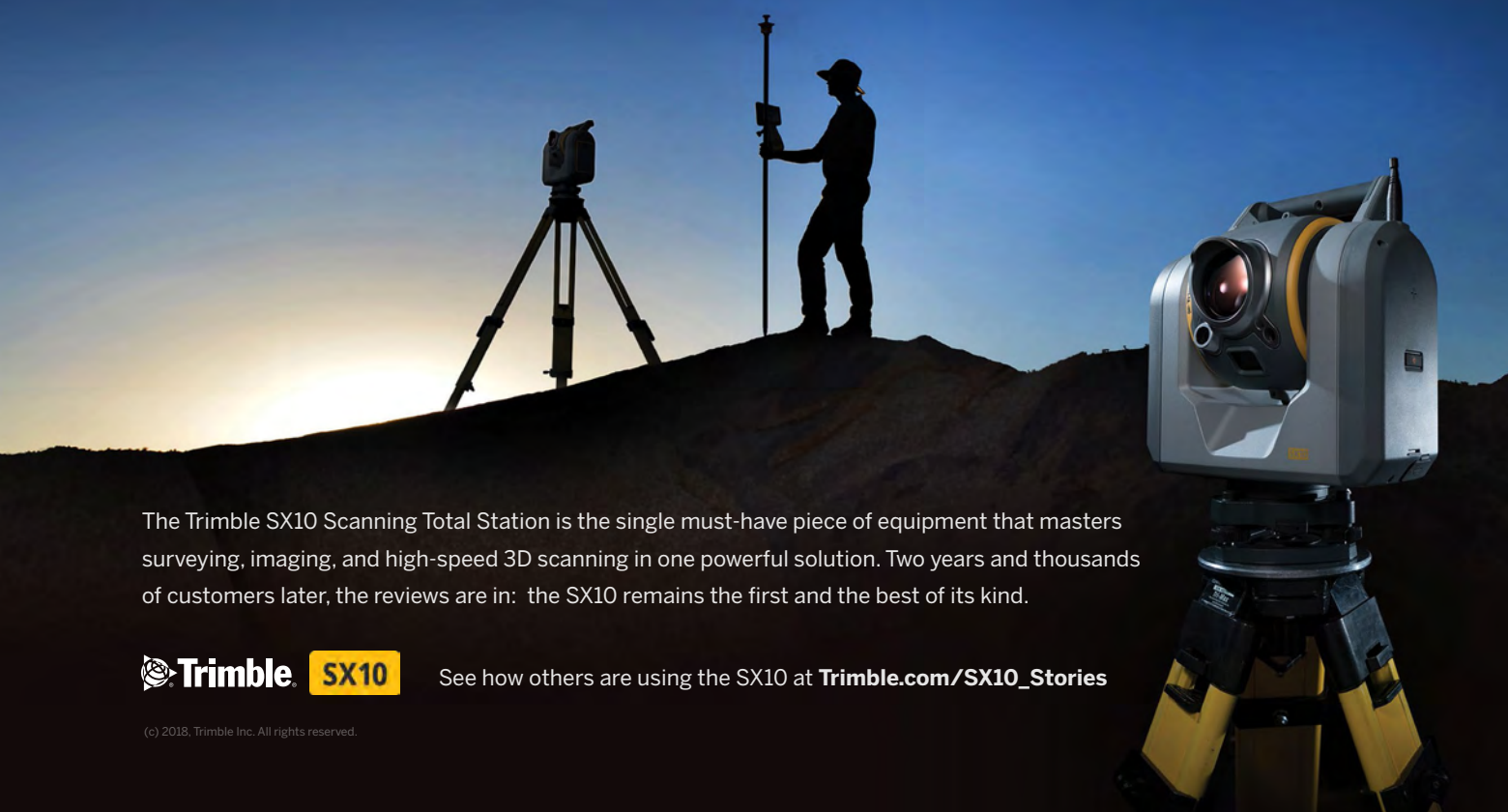

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decided **guidance: case examinations**

The Heroics of *Dykes v. Arnold*

The last place a surveyor wants to be is in a courtroom. We are not trained in courtroom etiquette and a working surveyor is lucky to have one business suit for marry'ins and bury'ins. Once or twice in our careers we may have to face a court and demonstrate the evidence package supporting our location of a boundary. I had the opportunity to chat with Gary Nyhus about his role and experience in the case of Dykes v. Arnold.

Gary formed Nyhus Surveying in 1993 and continues to work along with his sons Steven and Eric. The boys are both graduates of Oregon State University and licensed land surveyors. Gary's dad and granddad were both loggers which fostered Gary's intuition of the land and prowess as a surveyor. Gary credits his most valuable experience under the mentorship of another hero in our profession Robert Dahl. Yes, the same Bob Dahl that invigorated the 2009 Manual of Surveying Instructions with the life and

breath of retracement work performed long after the federal pie is served up. Gary was the defendant's surveyor and was kind enough to share his experience with The American Surveyor readers. We discussed the following questions.

Did you expect or know that you would be going to court when you did your survey?
Nyhus: *While I did not expect to go to Court I realized there was a possibility of that happening when I performed this survey do to the hostility between my Client and his neighbors (Dykes).*

Did you have any training in what happens in court?
Nyhus: *I had very little knowledge about what happens in court. I had been an expert witness before, but that consisted of answering a few questions that I felt were straight forward.*

On a scale of 1 to 10 how stressful was the experience?
Nyhus: *I would say this experience would rate an 8 on the stress scale. Probably the most stressful part for me was the deposition with Dykes Attorney. He was well prepared to pick me apart and I did not know what I was walking into.*

Did Dennison attempt to resolve the discrepancy or otherwise contact you?
Nyhus: *As far as I know Chuck Denison did not try to resolve this discrepancy since he was certain that he was correct in his location of the Center ¼.*

Did you have any sense that the owners may have come to some agreement rather than going to court?
Nyhus: *Both parties (Arnold and Dykes) seemed to be adamant about the location of the Center ¼ corner and the old fence lines.*

Joe Arnold knew that he was correct in his knowledge of the property lines in this area and the Dykes' were certain that the Survey by Denison was correct, so I never saw a serious effort to reach an agreement.

What did you think after the lower court said that "stubbing in" was not authorized in the G.L.O. instructions?
Nyhus: *I was not surprised that the court did not feel the Derrick Center ¼ was established properly. In fact, at the time I was not sure if it was the center of the section. It certainly did appear as property rights were established to this location however.*

How did you find the 1899 Derrick Survey and how did you determine that your function was to retrace that particular survey?
Nyhus: *When I was first contacted by Joe Arnold he told me about old survey marks that he could remember when he was*

young. We met on site and he showed me the general location of the old center ¼. He told me how his Father had told the kids to leave the old wood stake alone since it was their property corner. This stake had disappeared at some point in time. I then did my office research and found County Surveyor Derrick's 1899 survey. I also found County Road deeds from 1931 that called to the center of the section. I was not able to find any other "old" surveys in this vicinity. That meant the Derrick corner must be what had been relied upon prior to the more recent survey work. I then tied the old fence lines running to the North and East in several locations and calculated an intersection point. It should be noted that the fence line in the actual center ¼ corner vicinity had been obliterated several years prior when a bulldozer had been used to clear brush. This also would have broken off Derrick's old stake at ground level if it was still standing at that time. The existing as-built centerline of Tomjack County Road was also tied and I was able to match the existing location with the 1931 deeds. I also was able to locate an unrecorded iron pipe monument at an apparent deed corner southwest of the center of section. All of this information was used to calculate the search area for the old center ¼.

The Nyhus crew are no strangers to beating hubs on a construction site. Gary and the boys embrace and carry on the Nyhus work ethic passed down through generations of stalwart Oregon loggers.

> "He told me how his Father had told the kids to leave the old wood stake alone since it was their property corner."

Steven watches Gary pick apart an old stump looking for GLO scribing, which was found.

Eric and Gary stand looking down from the top of an 80 foot high "line bluff"

When you landed in the three foot circle at the center of section did you know what you were looking for and if so how?

Nyhus: *I had searched for numerous GLO corners in this county thru the years. Experience told me that if the point of the wood stake was not in existence, we had a good chance to find the outline of the rotted stake. The mineral soil in this area is typically brownish in color while rotted organic material is darker.*

What experience in your career guided you to find something hidden for years? There is no set of written instructions to find the remnants of a rotted stake set by a hack method. How did you get it right?

Nyhus: *Prior to starting my own Land Surveying Company in 1993 I spent a field season with a BLM Cadastral Crew where I was first exposed to "following in the footsteps of the Original Surveyor" by Robert W. Dahl. I then spent five years working for the Lincoln County Surveyor's Office in the corner preservation program. This entailed corner search and the perpetuation of GLO corners. After starting Nyhus Surveying, Inc., our specialty became Cadastral work, mostly for the large Timber Companies in this area. Again, we spent a good portion of time searching for Original GLO corners.*

What is your advice to surveyors regarding retracement work and litigation?

Nyhus: *My advice is being diligent, do your office and field research to the best of your ability. Always remember that a retracement survey requires you to "follow in the footsteps of the original Surveyor". Once you have completed your retracement it is very important to document your procedure and findings. It is extremely helpful to work with an experienced, knowledgeable Attorney during Litigation as the Courtroom is their domain and they can provide valuable insight for a Land Surveyor in Court.*

I want to thank Gary for taking the time to share his experience with us. His heroic retracement stands in perpetuity to protect the rights of the landowners. He was the right person on the scene at the right time. The

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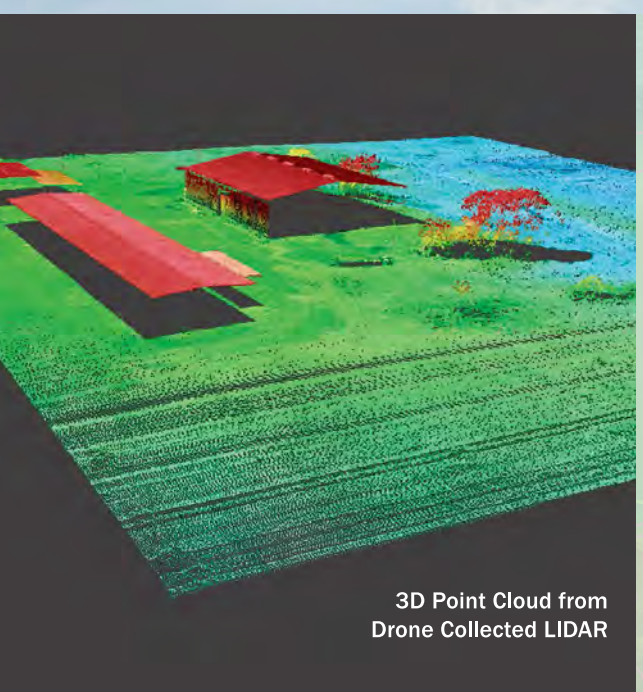

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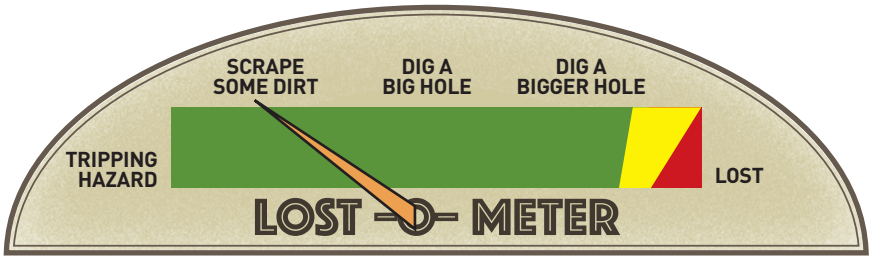

Nyhus' experience and diligence toward recovering the local moss covered corner remnants barely even raised the needle on the old lost-o-meter.

facts revealed that Nyhus' faithful retracement was truly accurate and his function was served. But how did he get there?

You'll notice that the first thing Nyhus did was gather potential evidence directly from the landowners. He exhaustively searched for records, not just the current deed or tax map, but many sources including old road records and surveys. Nyhus went to the field to search for physical evidence and remnants on the ground. He was able to correlate the oral, written, and physical evidence that substantiate a reasonable place to dig. Obviously he hit pay dirt but that doesn't always happen. Coincidentally, evidence that guides us to "the spot" is some of the same evidence that substantiates a missing or obliterated corner, as well as the rare occasion to identify a lost corner.

Okay, so Nyhus finds his digging spot, what next? He knows what to look for, the condition it might be in, and how to archaeologically recover it. This is neither a guess nor luck. Nyhus went to great lengths to substantiate the evidence that placed him here and has "just cause" to be at this spot. Furthermore, his experience, knowledge, training and discipline point to Nyhus being the most proficient person to recover any remaining evidence of the original corner. He knew that a rotten stake bottom could maintain its organic pigment and present itself among mineral soils like a soft fossil. He also knew that a Schonstedt and a backhoe were not the right tools for this job. The court summed it up best "*He carefully removed the topsoil in that area and found a square stain of dark wood organic material that tapered to a point roughly one foot down…*" Nyhus concluded his retracement survey by resting on evidence directly relating the original survey marks with the original record together with the landowner's reliance on the mark.

So there we have it lock, stock, and barrel. 1.) An original survey was made in 1899 under authority and documented. 2.) The property owners occupied the land and built things accordingly. 3.) The original mark was degraded through natural and unintentional action. 4.) A century later confusion arose between landowners and retracement surveys were requested. 5.) The remains of the original mark were unveiled by reconstructing reliable evidence and records. 6.) The court recognized the stability of the boundaries affirmed through the five aforementioned events. I think that's about as good as it gets when we talk about the brilliance of the PLSS after land is patented. I'm sure this was not the most pleasant experience for Dykes, Arnold, Nyhus, and Dennison. Regardless, old T-Jeff's chessboard has withstood another test of stability under private ownership. Interestingly enough the damage needle on the "lost-o-meter" barely touched "obliterated". However, the plaintiff paid for, and was handed a bill of goods that included a lost corner. Gnaw on that for a while.

I have a few parting thoughts regarding the surveyor's awareness of law, evidence, and stability of boundaries. I think it's important to remember that the plaintiff's surveyor Dennison followed laws that led him to subdivide the section "by the numbers". Dennison's map appeared very thorough, with accurate measurements, and in conformance with the reporting standards, or in other words, a good mechanical survey. His actions indicate that he felt that the original county work was invalid. Not just done incorrectly by the numbers, but legally invalid. That's a big claim and outside of us disagreeing with another surveyor's opinion, I'm not sure

Gary is a hands on surveyor working tirelessly everyday in his forest lined and moss carpeted office.

we have the authority to actually invalidate another survey. It's not hard to cherry pick a few statutes pointing at "the Manual" and talk yourself into a lost corner. Regardless, the law really has a high standard of a lost corner and it's less likely to happen outside of the federal arena when land owners are in the mix. Nyhus showed us how a few inches of topsoil made the difference between lost, obliterated, and existing. ■

See full-size images of the Dykes plat at:
archive.amerisurv.com/docs/P1j.jpg
archive.amerisurv.com/docs/P2j.jpg

The corner record from the Dykes survey:
archive.amerisurv.com/PDF/MON_PED.pdf

Jason Foose is the County Surveyor of Mohave County Arizona. He originally hails from the Connecticut Western Reserve Township 3, range XIV West of Ellicott's Line Surveyed in 1785 but now resides in Township 21 North, Range 17 West of the Gila & Salt River Base Line and Meridian.

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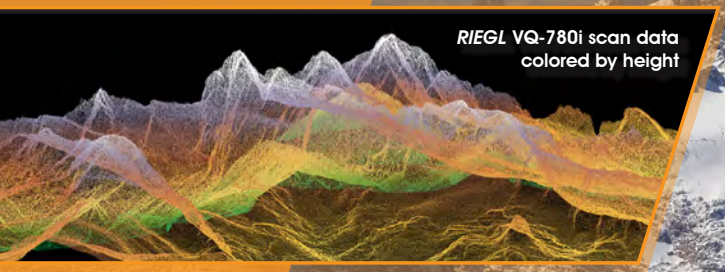

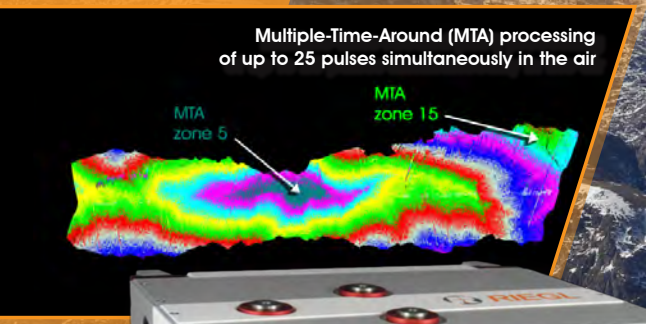

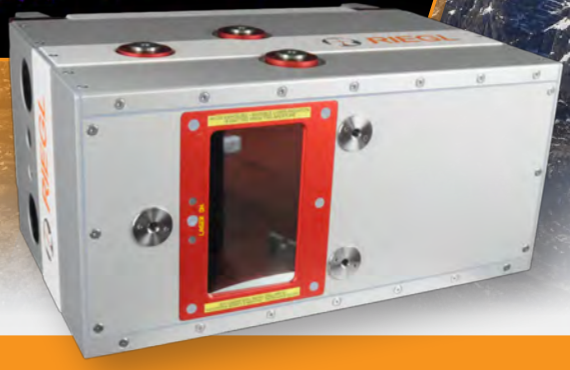

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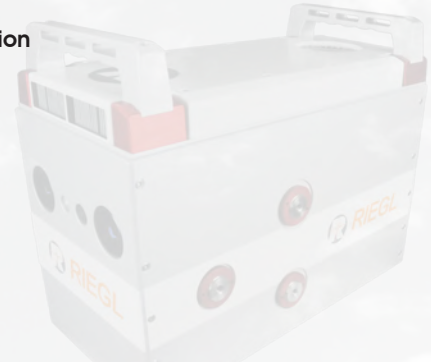

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Trends to Watch

Geospatial's Next Wave of Innovation

There's no question digital transformation is making geospatial technology increasingly relevant in industries globally, whether adding precision to a position, context to mass data collection, or content and attributes to a project model.

Spurred by an evolution in computing power and connectivity that soon will improve exponentially with 5G connection speeds, the rise in global demand for geospatial data and geo-enabled devices is propelling technologies to evolve. In fact, according to a recent GeoBuiz report, the global geospatial market is expected

» BORIS SKOPLJAK AND CHRIS TREVILLIAN

With the Trimble MX9 Mobile Mapping System, all sensors are time synchronized with precise GPS time tags and are linked to the trajectory that is recorded with the GNSS/IMU subsystem. That way, all recorded points and images can be properly aligned in a post-processing step.

to grow an estimated 13.6 percent through 2020, significantly faster than the growth rate of 11.5 percent from 2013-2017. It also shows the GNSS and positioning industry—the largest of the geospatial universe—is estimated to grow at a CAGR of 13.5 percent to reach $260.8 billion in 2018-2020. The GIS and spatial analytics market is the second largest, the report states, with rapid growth expected to continue from $66.2 billion (a 2017 estimate) to $88.3 billion in 2020.

Scanning the horizon, these questions emerge: What technologies will transform the geospatial industry in the next few years? What are the next big steps required to make spatial content more relevant?

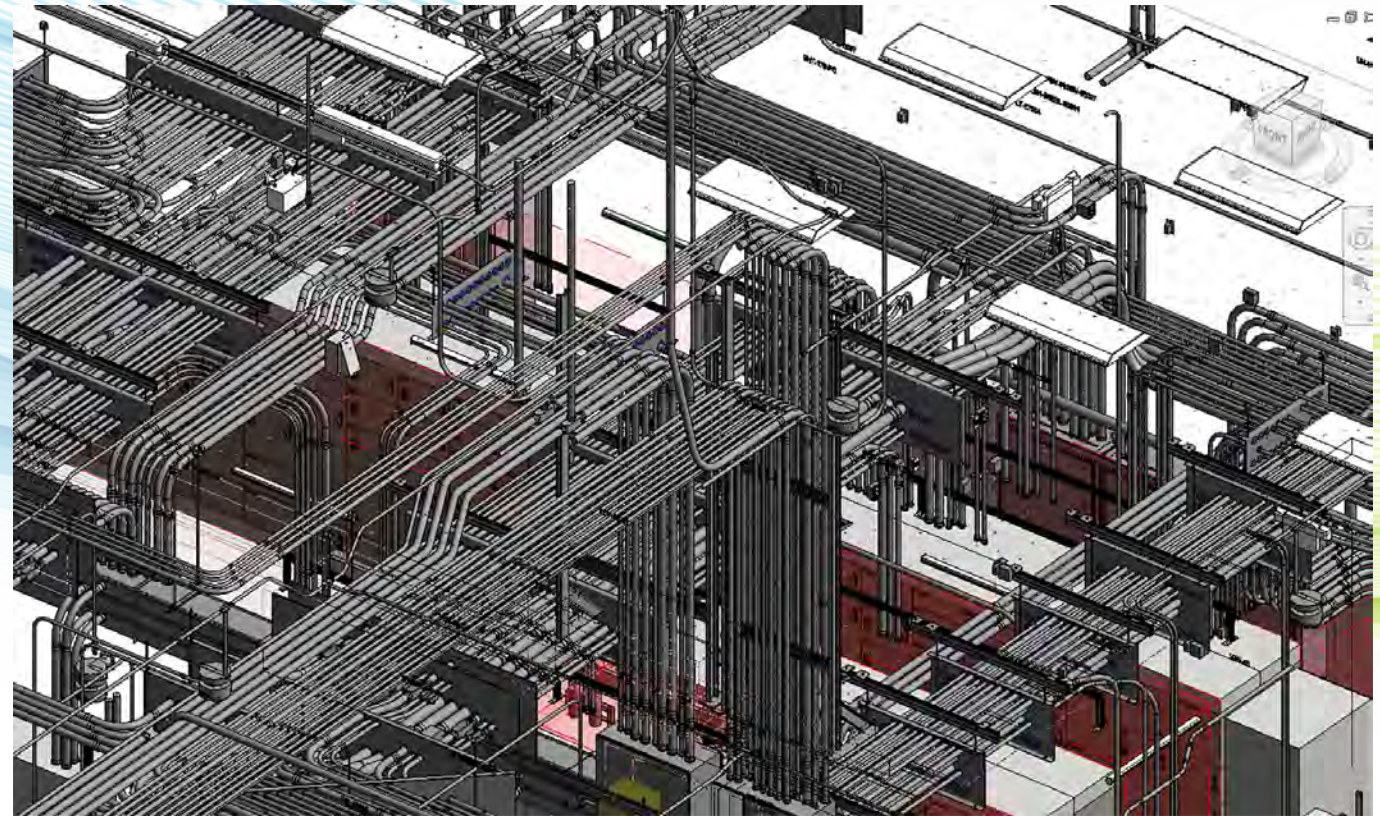
Geospatial professionals are hungry for advances in technology that can help them do more, including providing richer, more insightful deliverables to general contractors, civil engineering and construction teams, designers, business owners and key project stakeholders.

When considering the next wave of geospatial technology, the most disruptive themes include sensor fusion, autonomous vehicles, mixed reality, big data analytics, the as-a-service business model and 3D modeling/BIM. Many of these innovations will be available not merely through a single tool, but through the integration of multiple technologies.

Here are the key technology trends we believe will drive the geospatial industry forward over the next 18-24 months:

Sensor Fusion

Sensor fusion is one of the leading edges of product development because of the power that comes from combining multiple differ-



BIM technology creates intelligent models that promote a richer understanding.

ent sensor types or technologies in ways that maximize their combined strengths while minimizing their combined weaknesses. The fusion of sensor technologies to include more IMUs, GNSS and emerging technologies like Solid State LiDAR and SLAM processing is making it possible to merge multiple disciplines of mass geospatial data capture into one seamless routine.

Mobile mapping systems are one example. They combine the various strengths and weaknesses of different types of sensors—inertial (IMU), wheel speed, GNSS, cameras and LiDAR—and fuse these sensor outputs, achieving greater levels of accuracy and detail for engineering operations and design.

Having different types of sensor data can be extremely powerful, but even more beneficial is fusing that data for analysis and decision making. Supported by the right software, sensor fusion is about getting the most out of various sensors and sensor combinations to solve business problems.

This technology integration will remain a growing trend in the surveyor community as more geospatial professionals take advantage of unique sensor combinations purpose-built to help provide better geospatial context.

> "As the digital world continues to evolve, the relevance of geospatial information and technology will continue to build on its current momentum, adding spatial dimensions to many business processes."

Data-Driven Decisions

There's been significant effort and accomplishment in making mass data collection easier over the last decade. Looking ahead, geospatial professionals will need to spend an equal amount of effort to make that data useful in meaningful ways. In other words, technology innovators need to provide geospatial professionals with the processing tools and software applications necessary to effectively process the data into deliverables that matter.

Also, because the future geospatial industry has limited tolerance for restraints such as the use of multiple software packages to store and analyze data, we will start to see further adoption of a single geospatial data hub that enables users to bring all disparate

data to a single department, enabling field-to-finish with confidence. This central hub will also allow geospatial professionals to choose the best hardware tool for the job, whether they walk it, fly it or drive it to gather data.

The ultimate goal will be to move away from heterogeneous files—and those collections of data—into reusable, more reliable systems of record that can be used across multiple disciplines and multiple user personas. The cloud-based platforms and feature services will play a major role in eliminating unnecessary physical data transfer and connect and enable easier project collaboration and information exchange.

As a Service Business Model

Geospatial customers increasingly see solutions offered as a subscription or pay-as-you go service, rather than a one time purchase. This model is providing benefits to enterprise and large organizations enabling them with a more predictive cash flow. The as-a-service model provides easier access to professional grade measurement technologies, enabling more people to enhance and streamline workflows and project deliverable creation. The as-a-service approach results in more people using their smartphones and mobile devices to receive satellite data for a precise position. This technology advancement will multiply the capability of field organizations to increase the reach and rapidness of data collection in the coming years.

Modeling and Visualization

Geospatial data—such as point clouds, complex meshes and terrain models—are often difficult to explain and deliver to clients. The use of augmented reality (AR) and mixed reality (MR) tools will increase in the next several years to improve understanding of existing site conditions by overlaying models over the existing environment. For example, a user of augmented reality technology could view existing underground services and future landscapes overlaid on a worksite to avoid hitting a utility line during excavation work. Other benefits include collaboration, planning and asset management. Organizations that can offer this functionality to their customers will have an edge on the competition.

3D Modeling, BIM

The design and construction industry is at a tipping point in which BIM (Building Information Modeling) can positively impact geospatial professionals' work the more they embrace it. However, prospective BIM adopters need to realize the technology not only provides intelligent 3D modeling, but it also offers a centralized platform for sharing data to help partners communicate effectively – in real-time. When surveyors take advantage of BIM holistically, they are not only factoring in the traditional aspects of a building's design but also generating rich data spanning the range of properties of a structure's components, construction and maintenance.

The challenge with BIM adoption is not just to encourage surveyors to use newer technologies, but rather to convince them to start seeing it as a paradigm shift in the design and build process altogether. At its core, BIM is meant to transform how project teams work together on a job, from start to finish.

Future Technology Integration: Closing the Gap on Segmented Functionalities

As the digital world continues to evolve, the relevance of geospatial information and technology will continue to build on its current momentum, adding spatial dimensions to many business processes.

Traditional silos that previously segmented functionalities will increasingly dissolve, with further integration driven by cutting-edge technologies. This integration will help reduce the gap between data capture, processing, analysis and delivery of an easy-to-understand, cohesive image of the real world, from surveyor to customer.

Looking ahead, as more geospatial professionals embrace the power of these digital advances, there will be productivity improvements, cost savings and new business opportunities to realize for years to come. ■

Boris Skopljak is marketing director for Trimble Geospatial strategy and analytics.

Chris Trevillian currently works as market manager within Trimble Geospatial for optical, imaging and 3D scanning solutions.

USLM No. 2 in the St. Joe Mining District of Idaho was placed on this advantageous point along the Idaho/Montana border in 1903. The "Lucky Dutchman" claim (MS 1890) is located approx. one-half mile to the southwest.

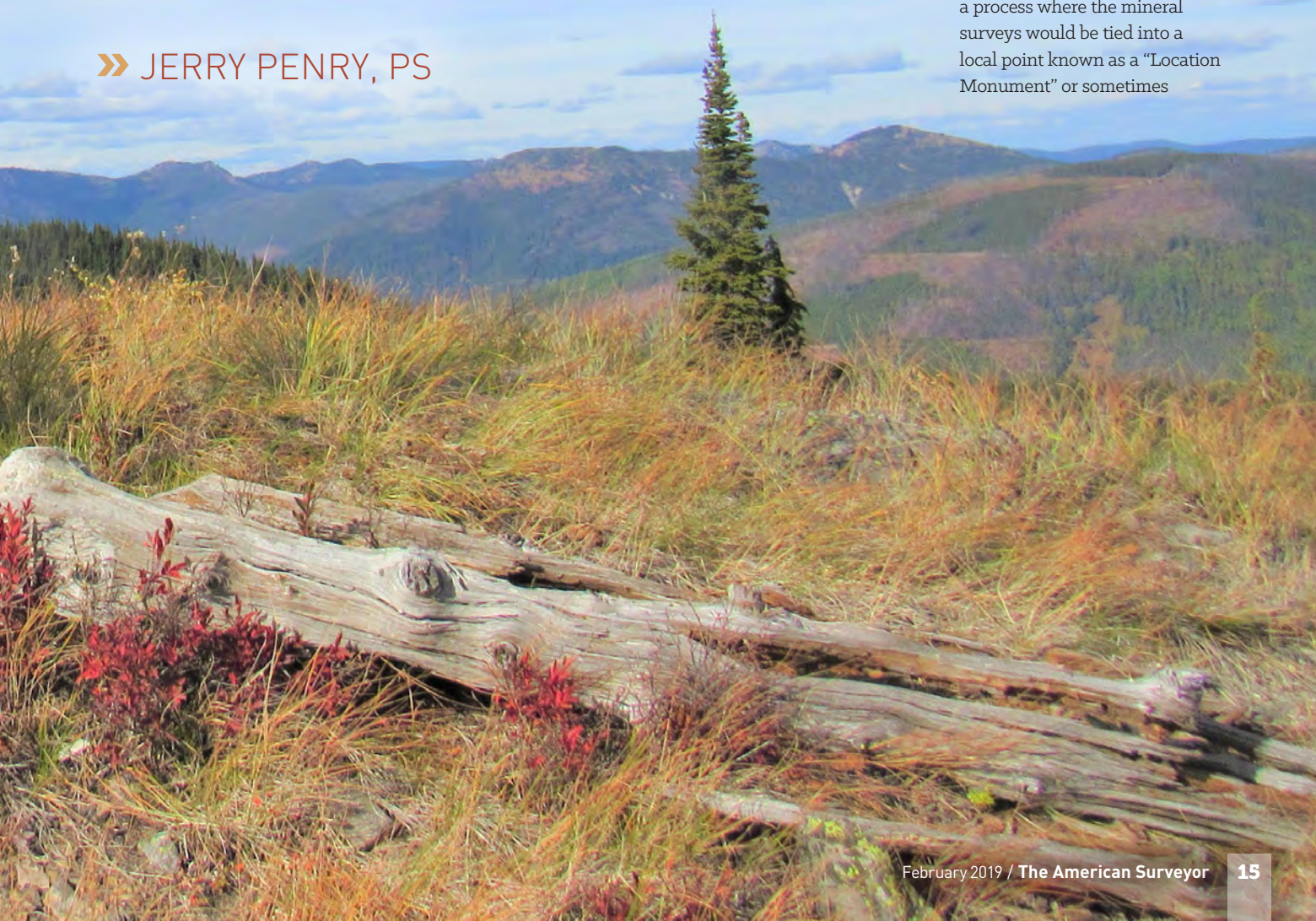
U.S. Location Monuments

» JERRY PENRY, PS

The growth of nearly every civilization can be linked to the discovery, development, and application of its precious metals and natural resources. Since the early populated areas of the United States generally advanced from east to west, so came the need for surveying the land. Notable early disruptions to this natural progression were the discoveries of gold in California in 1848, the Pike's Peak region of modern-day Colorado in 1858, silver in Nevada in 1859, the Montana and Idaho rushes of the 1860's, and the Black Hills rush of the late 1870's in Dakota Territory.

Development of these resources necessitated the need for establishing and surveying mineral claims to protect the rights of those who made the discoveries. Without changing the plan of the advancing surveys, it could take years or even decades before the Public Land Surveys would reach these areas.

To solve this dilemma, either a new meridian and baseline had to be quickly established or the mining claims had to be surveyed as separate tracts and tied into the system later. Because mining operations occurred immediately in these areas, the latter was often implemented as the best solution. The General Land Office devised a process where the mineral surveys would be tied into a local point known as a "Location Monument" or sometimes



USMM No. 1 in the Black Hills of Dakota Territory was established in 1877 on Deadwood Peak. Many mineral surveys, including those for the famed Homestake Mining Company, tied into this point for several decades before the GLO tied it into the PLSS.

This square nail (above) is likely the tie-in point on USLM No. 54 near Silver City, Dakota Territory. It was placed in 1887 during the survey of the "Nebraska Bar Placer" claim (MS 504).

USLM No. 3554 for Mineral Survey No. 3554 in Montana was established in 1891 for the "Silver Crest Lode" in the Boulder Mining District.

referred to as a "Mineral Monument". These monuments were usually designated USLM or USMM.

The site for the location monument was generally upon a prominent point preferably visible from other directions and in a safe area so the permanency of the monument would not be endangered by snow and rock landslides or other natural causes. Early instructions specified Corner No. 1 of each mineral survey was to be connected by course and distance to the nearest location monument if the claim lied within one mile of an established monument. If none existed within the required distance, then a new location monument was established.

A detailed description of the location monument and sometimes a topographical sketch of its locality accompanied the mineral survey notes sent to the Surveyor General's office. From the location monument, bearings and distances were to be taken to two or three nearby bearing trees or rocks. Bearings were also taken to prominent mountain peaks and the approximate distance and direction was given from the nearest town or mining camp. This information assisted the Surveyor General in determining within which townships the location monuments were placed when the public land surveys arrived later.

The initial instructions regarding mineral surveys were issued by the respective surveyor generals within the state where the surveys were being performed. This resulted in some differences in the manner in which the location monuments were described and numbered. The exact number of specific manuals that were issued for mineral surveyors is uncertain. Those known to exist are for the states of Colorado, Idaho, Montana, New Mexico, and Utah variously between the years 1883 and 1894.

In the preface for the 1890 Montana manual, George O. Eaton, U. S. Surveyor General, mentioned an "old manual", issued

All GNSS civilian signals

TRIUMPH 3

Based on TRIUMPH chip with 864 channels

• Spread Spectrum • Bluetooth • UHF • 4G/LTE Cellular • Wi-Fi • Integrated GNSS antenna

see back page >

J-Mate Overview

6 pages inside >

J-Mate Test Volunteer

We have delayed the introduction of the new J-Mate to enable us to add new features like replacing liquid vials with a highly accurate internal inclinometer to monitor and continuously compensate for level offsets.

We now are ready to send J-Mates to **20 volunteers in the United States**, who would like test the J-Mate with their TRIUMPH-LS and give us feedback over a period of up to two months.

As a reward for each volunteer's efforts, we will offer a **50% discount on the J-Mate** if they decide to buy it.

Please go to **www.javad.com**, to submit your volunteer application at "J-Mate Test Volunteer".

JAVAD

J-Mate Quick Overview and Update to Videos

First let's set the record straight: J-Mate is not a total-station. J-Mate and TRIUMPH-LS **together** are a **"Total Solution"** which is a combination of GNSS, encoder and laser range measurements that **together** does a lot more that a total station. At long distances you use GNSS and at short distances (maximum of 100 meters) you use the J-Mate along with the TRIUMPH-LS. Together they provide RTK level accuracy (few centimetres) in ranges **from zero to infinity**. Although the sensors are specified to work up to 100 meters, usage is more quicker and more convenient for distances of up to 50 meters.

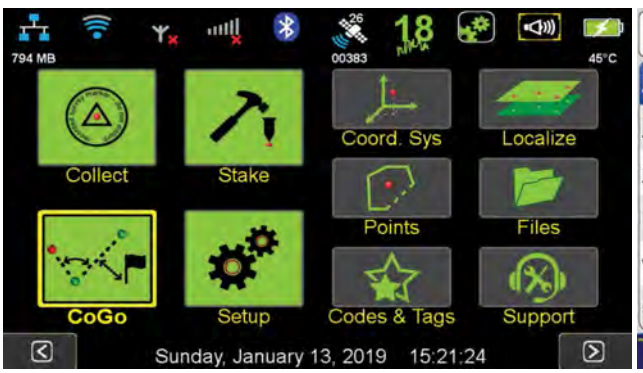
One burden that we leave you with is to focus the camera manually when you need it. If you are always more than 15 meters away from the target, you keep the focus button on maximum and leave it there. We will replace the focus button to make it easier to access if needed.

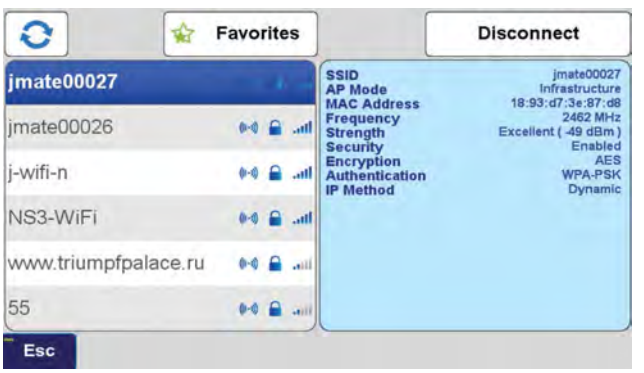
As with the TRIUMPH-LS, with the J-Mate we also provide software improvement updates regularly and free of charge. Download the J-Mate update in your TRIUMPH-LS and then inject it to the J-Mate. When you connect the TRIUMPH-LS to the J-Mate, the injection will be done automatically; but with your consent.

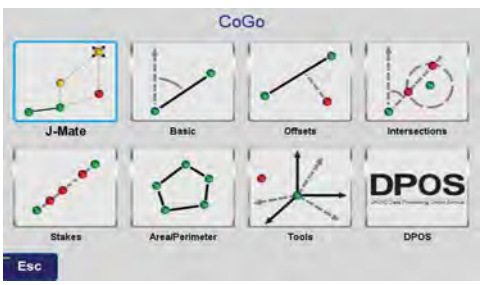
There are many new features in the J-Mate. We try to explain them in a few steps. Please also view the J-Mate videos in our website.

Connecting J-Mate to TRIUMPH-LS:

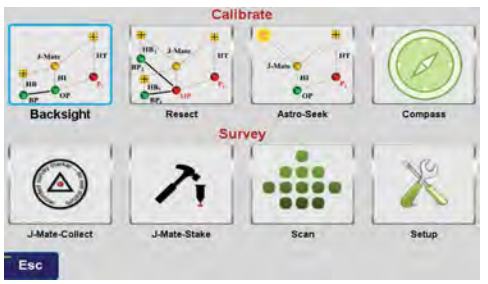
TRIUMPH-LS communicates with the J-Mate through Wi-Fi. Turn on both the TRIUMPH-LS and the J-Mate. Click the Wi-Fi icon of the TRIUMPH-LS Home screen to connect to the J-Mate, much the same way as you connect TRIUMPH-LS to your Wi-Fi access point. J-Mate has ID of the form JMatexxx.







After connection, try to get acquainted with the **Main Navigation Screen**: On the TRIUMPH-LS Home screen, click CoGo/J-Mate/J-Mate Collect/Capture Target points.



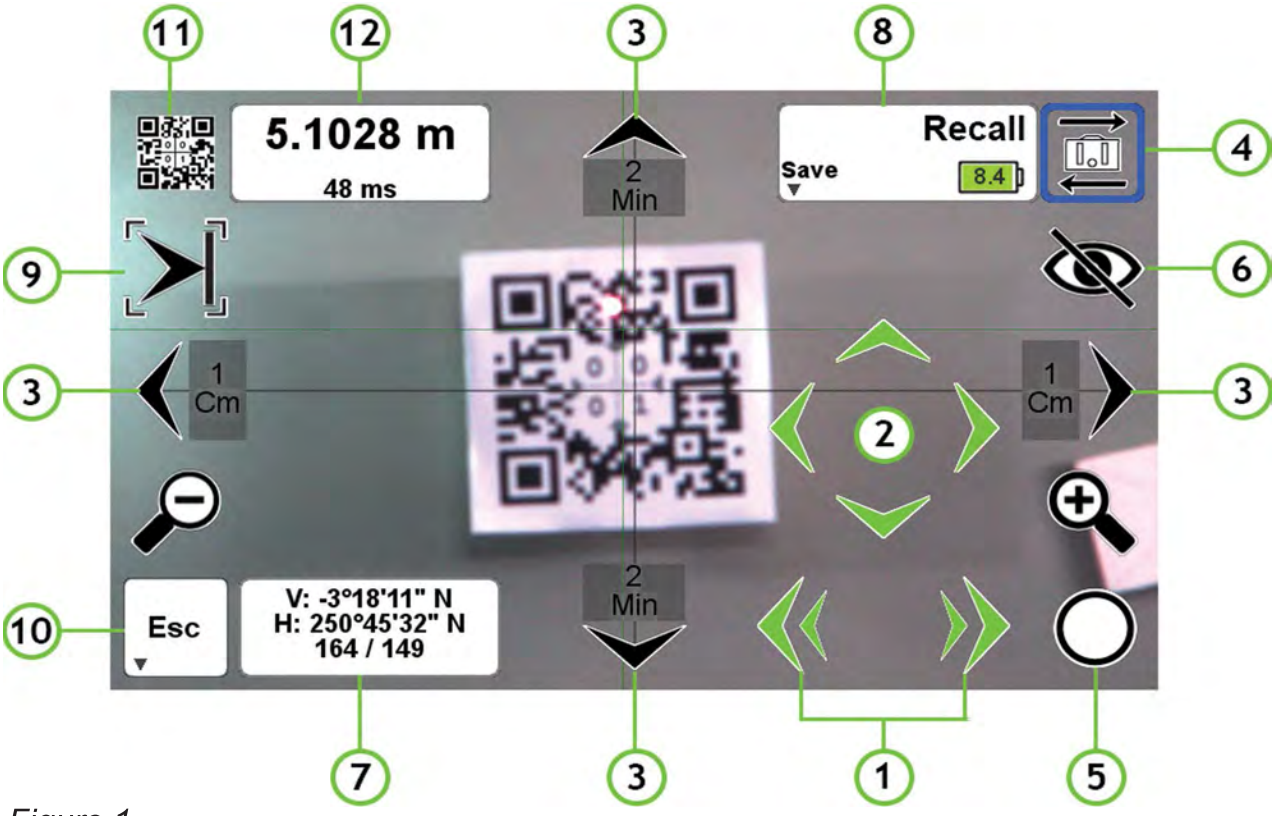


Figure 1

This is the **Main Navigation Screen**

Finding the Target:

You can find targets manually or automatically.

There are five ways that you can manually rotate the J-Mate towards your target:

1. On the bottom right of the Main View screen, there are left and right “Fast Motion” buttons. While you hold them the J-Mate rotates about 30 degrees per second. (**“1”** on the Figure 1)

2. Above them, there are slow Left/Right/UP/Down “Slow Motion” buttons. While you hold them, the J-Made rotates about 5 degrees per second. (**“2”** on the Figure 1)

3. Then there are Left/Right/Up/Down buttons around the screen. Each click moves the J-Mate according to the value that users assign to them. Hold these buttons to assign angular or linear values to them (**“3”** on the Figure 1). The Value Assignment Screen is shown in Figure 2.

4, Touching points and on the two cameras and by gestures.

5. You can also rotate the J-Mate manually while it is not moving automatically, but limit that to the small rotations in the area of motor free motion, not to apply backpressure to motor as much as you can. Motor manufacturer does not prohibit manual motion, but we think it is better to avoid that as much as possible.

Figure 2

Finding the target automatically: There are three ways to search and find the target automatically:

1) One is by laser to scan and snap to a point when range changes by the specific amount. This is particularly valuable to snap to cables, poles and edges of buildings.

2) Second is search for the object of the specific flat size and focus on its center.

3) Third is with the camera to search for the QR target that we supply. We will discuss these later.

Switching between the two cameras: You can view the scenes by the wide-angle camera of TRIUMPH-LS, while sitting on top of J-Mate; or by the narrow angle precise camera on the Side of J-Mate. Click Button **"4"** of Figure 1 to switch between the two.

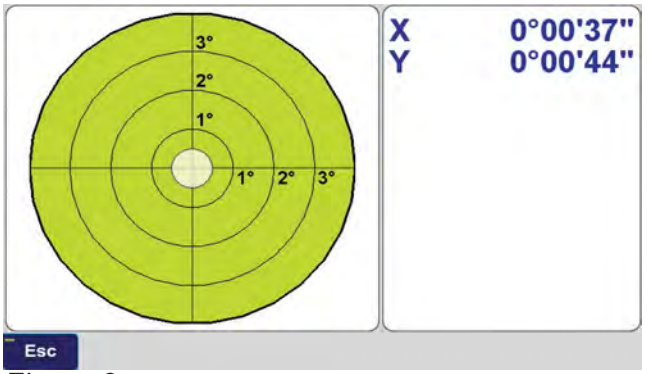


Figure 3

Viewing the embedded Inclinometer:

If you hold button **"4" of Figure 1**, you will see the embedded 0.001-degree electronic inclinometer of the J-Mate as shown in Figure 3. It updates 10 times per second.

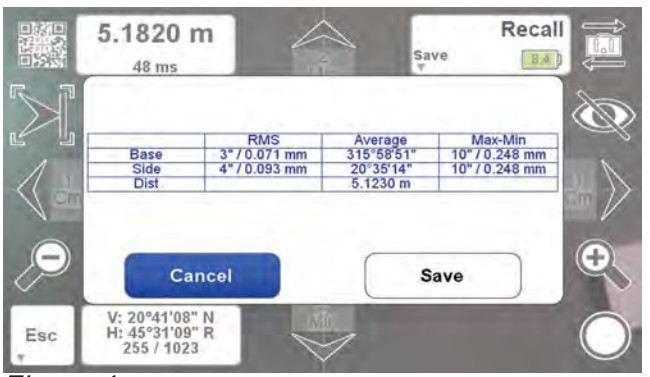


Figure 4

Taking a Point:

When you focus on your target manually or automatically, you can click the "Take" button (**"5"** in the Figure 1). The Encoders will be measured 10 times, the average, RMS and spread will be shown and you can decide to accvvept or reject (Figure 4). The accepted points will be treated like RTK points but labeled as "JM" points.

You can access and treat them like any other points in the TRIUMPH-LS.

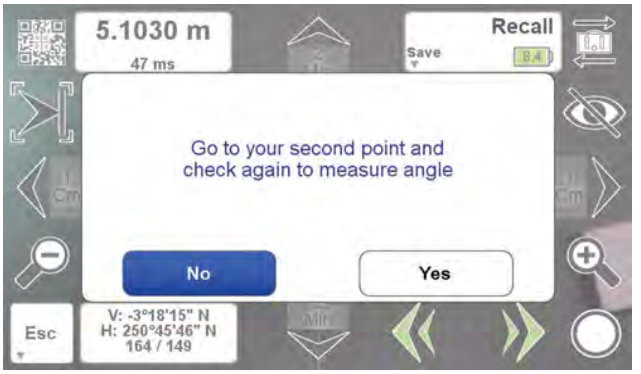
Figure 5

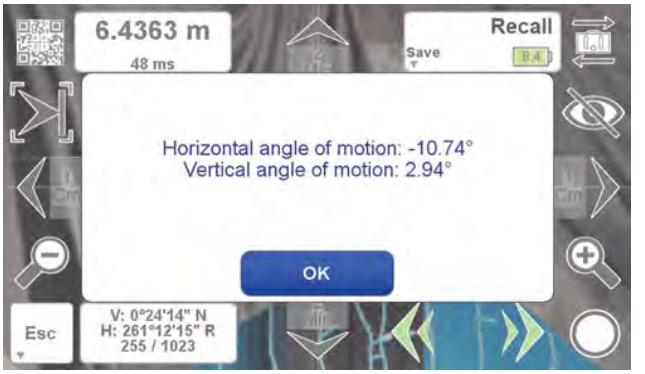
Viewing the Measured Points:

Clicking button **"6"** in Figure 1 will remove some of the items from the screen (Figure 5). Hold it long and you will see live view of the points taken by J-Mate.

Measuring angles quickly:

Aim at the first point and click button **“7”** of Figure 1. Then Aim to the second point and click this button again. You will see the horizontal angles between the two points.





Saving and Recalling Orientations:

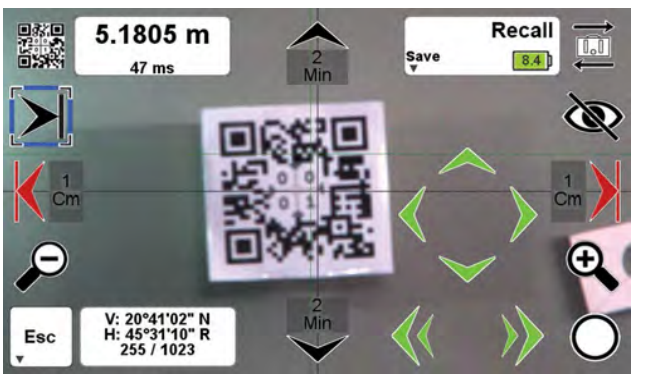
Aim at a point and hold long the button **“8”** of the Figure 1 to save the horizontal, vertical, or both of that orientation (Figure 7). Click this button to rotate to that saved orientation.

Figure 7

Scanning and Snapping to an object:

Click button **“9”** of Figure 1 and the left and right motion buttons (**“3”** on Figure 1) change to red which means when you click them scanning to snap will start when you click them. Hold long button 9 to get to the screen that sets the parameters for the Scan and Snap operation.

In this screen you can define the scan range and ask the scan to stop when range changes by the specified value. Then you can select the point that was measured before the stop or after the stop. By selecting a very large number you can scan the ranges that you have specified and record the 3D image. When you click button 9 to stop change the scanning back to normal motion, you will be asked if you want to save the scanned file. You can view the 3D image of the scanned file in the “File” icon of the Home screen of the TRIUMPH-LS.



Connecting and Re-connecting J-Mate to TRIUMPH-LS

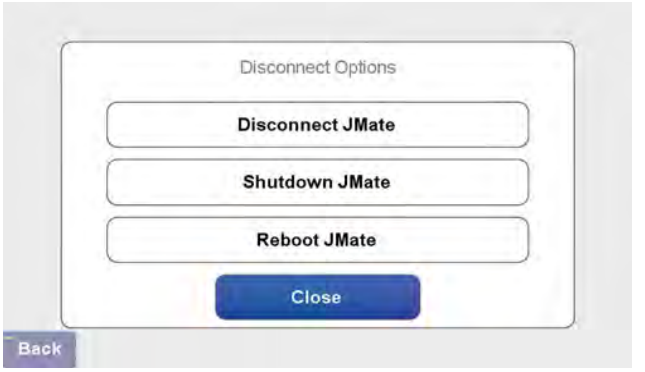


Figure 8

Holding the **"ESC"** button (**"10"** in Figure 1) will take you to Figure 8 which lets you disconnect J-Mate, Reboot, or turn off. Like all Wi-Fi connections, you may lose connection and need to use this screen to disconnect, re-connect, or re-boot J-Mate and in some occasions reboot TRIUMPH-LS too, especially when connection between the camera of the J-Mate and TRIUMPH-LS is lost.

View Range measurements

Box **"12"** of the Figure 1 shows the range measurements. It reads up to 20 times per second.

Automatic Finding of the Target:

Click the QR icon (**"11"** of the Figure 1). You will be guided through the following steps to aim at your target point. :

1. Put the TRIUMPH-LS on top of J-Mate (or slightly above it, but at the same orientation as the J-Mate, to be far from the motor magnets of the J-Mate) and click Next.

This step will transfer the compass reading of the TRIUMPH-LS to the J-Mate encoders.

You can skip this and the next step if you are in an area that the compass readings are not valid or you can aim manually in the next steps. .

2. Go to your target, Put the QR accessory on top of the TRIUMPH-LS and aim the TRIUMPH-LS towards the J-Mate (with the help of the TRIUMPH-LS camera) and click Next.

This will help the J-Mate to know the general direction to the target and limit its search range. You can go back to previous step to fine tune view of the J-Mate. Or you can skip these two steps altogether.

3. You will see the J-Mate camera view on the TRIUMPH-LS screen. You can fine tune the J-Mate view by the navigation buttons to make recognition faster. You can skip these steps if you don't want to make the search faster.

In hear you can also manually aim at the center of the QR panel and take your shot.

4. Click "Find by Optical" if you want the QR panel to be scanned and centered automatically.

When J-Mate focuses on the center of the QR, you can click the "Take" button. You will be asked if you want too record the point.

5. If you also want to find the center of the QR by Laser scanning, you can click the "Find by Laser". If Laser scan is successful, you can click the "Take" button to replace the previous measurement with the current measurement done by laser scanning.

The center of the QR is vertically collocated with the GNSS antenna and you don't need to be exactly perpendicular to the J-Mate path. For safeguard, we measure the four sides of the QR and determine the angular offset, if we need it.

If light condition is such that camera cannot find the QR, chances are better that laser scanner can find it.

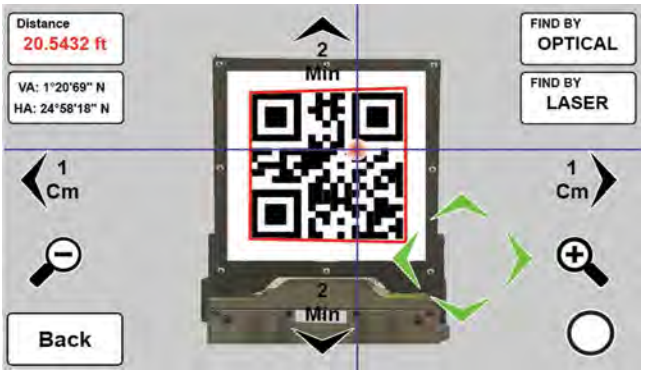
Finding the center of QR by laser and by the camera is a tool to calibrate these two sensors together.

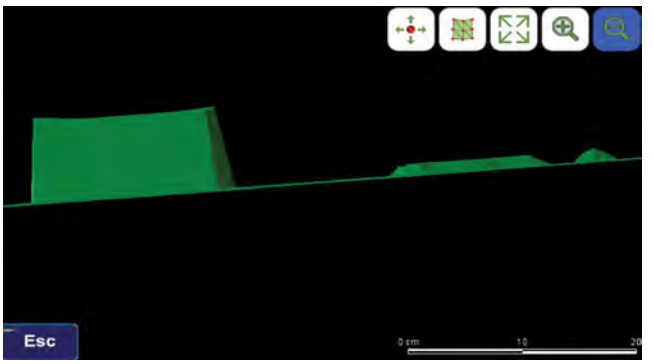
You can run this feature periodically to re-calibrate their axis if you need to. This calibration is small portion of the factory calibration.

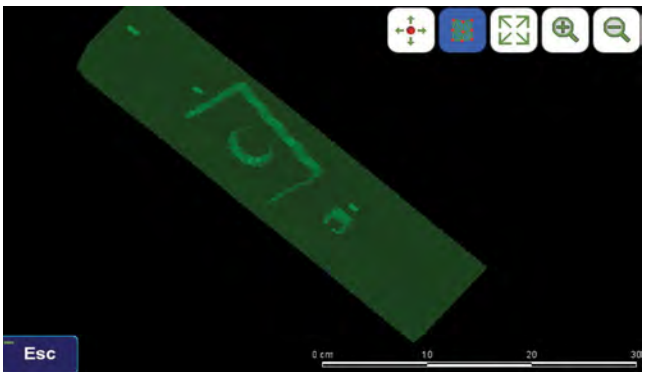
You see the 3 views of the 3D scanning

The first scan image is scan of a 1 cm thick and a 6 cm thick objects. 1 cm step resolution.

The last one is scan of a 12.5 x 8 cm object of 1 cm thickness.







This overview as also an update to videos at www.javad.com.

TRIUMPH-3

The new TRIUMPH-3 receiver inherits the best features of our famous TRIUMPH-1M.

Based on our new third generation a TRIUMPH chip enclosed in a rugged magnesium alloy housing.

The TRIUMPH-3 receiver can operate as a portable base station for Real-time Kinematic (RTK) applications or as a receiver for post-processing, as a Continuously Operating Reference Station (CORS), and as a scientific station collecting information for individual studies, such as ionosphere monitoring and the like.

It includes options for all of the software and hardware features required to perform a wide variety of tasks.

- UHF/Spread Spectrum Radio
- 4G/LTE module
- Wi-Fi 5 GHz and 2.4GHz (802.11 a, b, g, n, d, e, i)
- Dual-mode Bluetooth and Bluetooth LE
- Full-duplex 10BASE-T/100Base-TX Ethernet port
- High Speed USB 2.0 Host (480 Mbps)
- High Speed USB 2.0 Device (480 Mbps)
- High Capacity microSD Card (microSDHC) up to 128GB Class 10;
- “Lift & Tilt”
- J-Mobile interface

Ideal as a base station

Gary Little of Montana, reveals the chiseled scribing on a large rock that reads "I. P. Boulder Mon. 1". This was Initial Point No. 1 in the Boulder Mining District of Montana when the "Princeton Lode" was surveyed in 1885.

A bearing tree for USLM 3554 in Montana still shows the blaze and scribing made in 1891.

in 1884, had become obsolete with the issuing of various circulars and orders. This manual also mentioned the location monuments had formerly been known as "Initial Points". The 1890 Manual further stated the location monuments in Montana were now to be marked "U.S.L.M." along with the number identical to the survey for which the monument was established. Mineral Survey No. 4107, would therefore be tied into newly established USLM No. 4107 if it was the first survey in the area.

There were twelve U. S. deputy mineral surveyors at work in the Black Hills region of Dakota Territory in 1882. Filed notes as early as 1889 state the surveys were being done "*in accordance with instructions for the Dakota District*", indicating there was an early manual issued for the Dakotas. There were as many as sixteen different mining districts in the Black Hills, but the location monuments were never repeated in number. This region had at least 97 different location monuments that were established between 1876 and 1903. Colorado and other states, however, established location monuments with the same number if they were located in different mining districts. The Surveyor General's Office was most likely keeping track of each monument as it was established, however, ledgers specifically listing only the various location monuments are not known to exist.

In 1895, the GLO issued the first standardized "*Manual of Instructions for the Survey of the Mineral Lands of the United States*" that was to be used in all states where mineral surveys were being performed. This manual was reissued in 1897 and again in 1909. The 1909 manual stated the latitude and longitude for each new location monument should be determined as accurately as the instrument being used would permit. This was the last manual that was separate from the main Manual of Instructions to surveyors. Subsequent manuals only included chapters on mineral surveys.

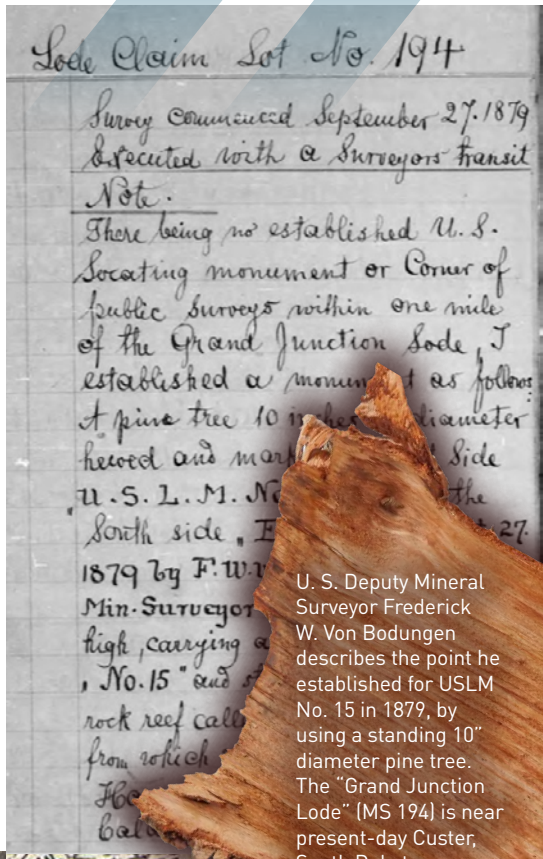
Before the instructions for mineral surveys were standardized to specifically state what should be placed for location monuments, the mineral surveyors were marking rocks, scribing trees and posts, or placing various items such as drill bits from nearby mining operations. The 1895 Manual stated if the location monument was to be placed upon solid rock, a cross with lines 6 inches each way should be chiseled one-fourth of an inch deep. Otherwise, a six-inch-square wood post, 8 feet long, with 3 feet set into the ground along with a conical mound of stone 3 feet tall with a 6-foot base surrounding the post should be used. The initials U.S.L.M., along with the monument's number, were to be cut into the rock or post with letters 3 inches tall. There was no objection to establishing monuments of a larger size or of material more durable. The chiseled cross on the rock would mark the exact tie-in point, or if a post was used, a tack or nail was driven to indicate the point. Some surveyors continued to use a variety of monuments and removing the lower branches of a tree and scribing it for the location monument was a favorite.

The field notes for the mineral surveys generally stated a single bearing and distance to the location monument from the initial corner of the survey. The plat, likewise showed one single line from the initial corner to the location monument. Since trees typically existed in the mountainous areas where the mineral surveys were performed, the surveyor often had to traverse to the location monument and then compute the straight line bearing and distance from it to the initial corner of the survey. The traverse or straight line connecting the mineral survey to the location monument had to be actually measured during the survey and could not be mathematically calculated through connections with other mineral surveys unless the lines of those surveys were first retraced for accuracy.

When the Public Land Surveys reached these areas, the location monuments were tied in to the nearest section corner by direction and distance. This ensured the individual mineral surveys could be mathematically tied into the overall public land system. Finding and tying in the location monuments into the system was undoubtedly a challenge for the deputy surveyors who were subdividing the townships where one was known to exist. The Surveyor General only provided the general topographical location where the location monument was supposed to exist which required the deputy surveyor to deviate from running his lines and make a thorough search.

Today, many of these important and early historic monuments have long disappeared. Most surveyors who have never worked in areas where the mineral surveys were performed are not familiar with location monuments. These monuments were an interesting aspect of the western surveys that provided a means to get the mineral claims surveyed in remote areas of the country without delay. ■

Jerry Penry has been surveying for 35 years, is licensed in Nebraska and South Dakota, and has been employed with Lancaster County Engineering for 22 years. He is also serving his second term on the Board for the Professional Surveyors Association of Nebraska.


Lode Claim Lot No. 194
Survey commenced September 27. 1879
Executed with a Surveyors Transit
Note.
There being no established U. S.
Locating monument or Corner of
Public Surveys within one mile
of the Grand Junction Lode, I
established a monument as follows:
A pine tree 10 inches diameter
hewed and marked
U.S.L.M. No.
South side
1879 by F. W.
Min. Surveyor
high, carrying
No. 15"
rock reef
from which

U. S. Deputy Mineral Surveyor Frederick W. Von Bodungen describes the point he established for USLM No. 15 in 1879, by using a standing 10" diameter pine tree. The "Grand Junction Lode" (MS 194) is near present-day Custer, South Dakota.

USLM 3654 (above) was established in 1887 for the "Meta Lode" (MS 3654) in the Helena Land District of Montana.

A myriad of mining claims (right) surround USLM No. 6 that was established in 1878 for the silver mines at Galena, Dakota Territory.

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UNSUNG HERO

Surveys across America by

Samuel Stinson Gannett

The Texas-New Mexico Border

The Rio Bravo del Norte, or the Rio Grande, meanders its way from Colorado to the Gulf of Mexico. The Great River of the North historically would flow uninterrupted to the Gulf of Mexico, but now the water from Colorado is lucky to make it there. The Big River, as it is also known, is the border between multiple Mexican States and even our International Border between Texas and Mexico.

New Mexico/Texas Boundary Monument No. 56

For a mere 25 miles though The Rio Grande is so much more. It is the border between Texas and New Mexico by El Paso. Laying between the International Boundary, being 31 degrees and 47 minutes North Latitude, and the North line of Texas, being 32 degrees North Latitude, this short snaking section of the Rio Grande lead to so much contention that it landed in the Supreme Court. Once again, Samuel Stinson Gannett was called upon to not only resolve its location, but to resolve its location as it existed on September 9th, 1850.

The history of this short segment of the Rio Grande is vast dating back to 1595 with the colonization of New Mexico by Don Juan de Onate. Technically though, our history starts when the Treaty of Guadalupe Hidalgo was signed on February 2nd, 1848, putting an end to the Mexican-American War. The treaty defined the international boundary, 25 miles of it being the disputed section eventually becoming the dividing line between Texas and New Mexico. Once the treaty was signed a commission was assigned by both Countries to survey the common line. As always, the map used for the treaty was in error and the international border geographically fell about 32 miles North of where depicted on the map. The map used in the treaty was drawn by John Disturnell and later partially copied by General Land Office principal draftsman Ephraim Gilman in 1848. Both maps had distortions in West Texas along the Rio Grande eventually leading to more arguments and the eventual disbanding of the commission all together in 1852. The Gadsden Treaty of

» JOSEPH D. FENICLE, PS

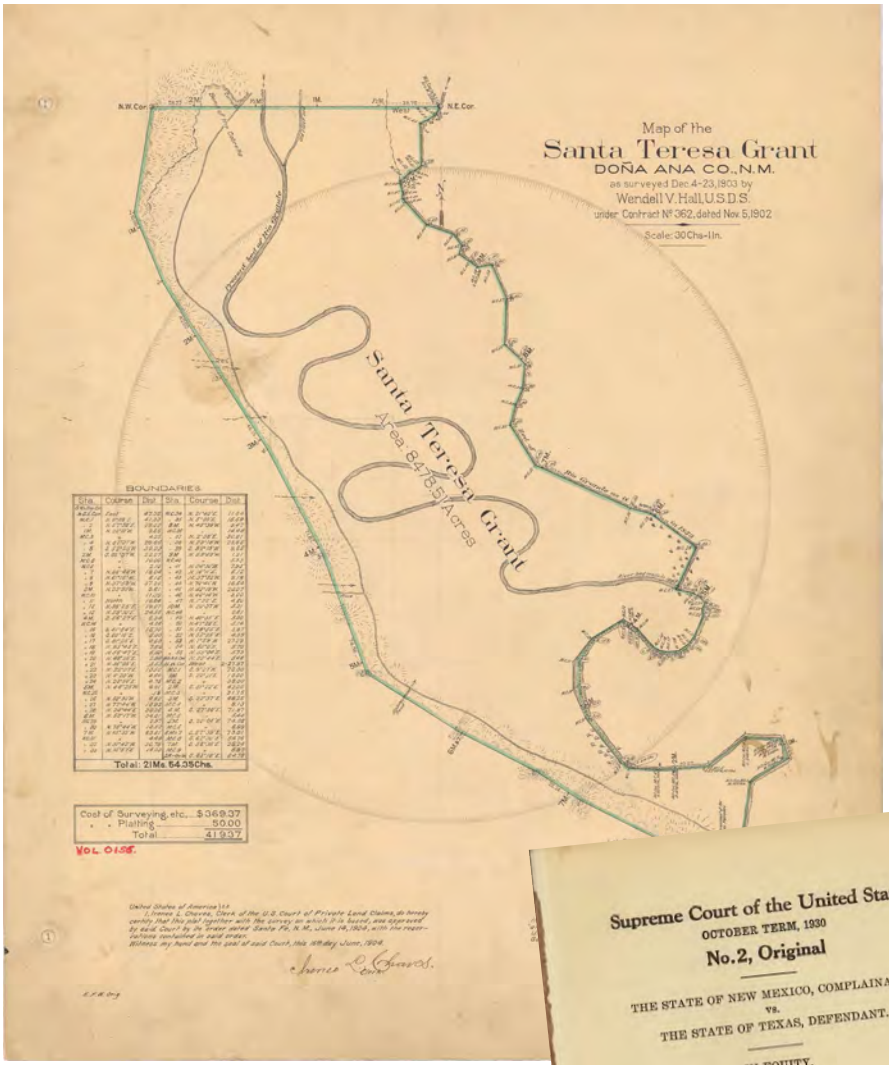
1853 solved this problem and made room for the proposed Southern route of the Transcontinental Railroad. This fixed the international border at this section at 31 degrees and 47 minutes North Latitude. Prior to that though two main surveys were made on opposite sides of the Rio Grande. On the East side a survey was made by Charles Radziminski. Radziminski has a very colorful history as he came to American in 1834 as a Polish Revolutionary exile. He climbed the ranks of the United States Topographical Engineers eventually landing the role as the Secretary of the United States Boundary Commission. His name is amongst significant others on a piece of paper stuffed in a glass bottle buried five feet below the monument marking the initial point of the joint survey between the United States and Mexico. The other survey, on the West side, was made by Jose Salazar y Larregui and Agustin y Luis Diaz—titled the Salazar—Diaz Survey of 1852. This was a highly accurate and detailed survey for its day. Salazar was extremely talented and held the titles of astronomer, mineralogist and geographer.

> "His name is amongst significant others on a piece of paper stuffed in a glass bottle buried five feet below the monument..."

Diaz, on the other hand, climbed the ranks of the Mexican Corps of Engineers eventually taking charge of Mexico's Geographic Exploration Commission.

Texas became the 28th State on December 29, 1845. A dispute arose between Texas and the United States and the area trying to become the New Mexico Territory. It wasn't until President Millard Fillmore stepped in and convinced Congress to pass the Texas Boundary Act as approved by the President on September 9th, 1850. The Act defined the boundaries of Texas as "…thence on the said parallel of thirty two degrees of North Latitude to the Rio Bravo del Norte, and thence with the channel of said river to the Gulf of Mexico". This Act, and description, created the Territory of New Mexico which eventually became the 47th State on January 6th, 1912. The State Constitution stated "…thence along the 32nd parallel to the Rio Grande, also known as the Rio Bravo del Norte, as it existed on the 9th day of September, 1850; thence following the main channel of said river, as it existed on the 9th day of September, 1850, to the parallel of 31 degree 47 minutes North Latitude". Prior

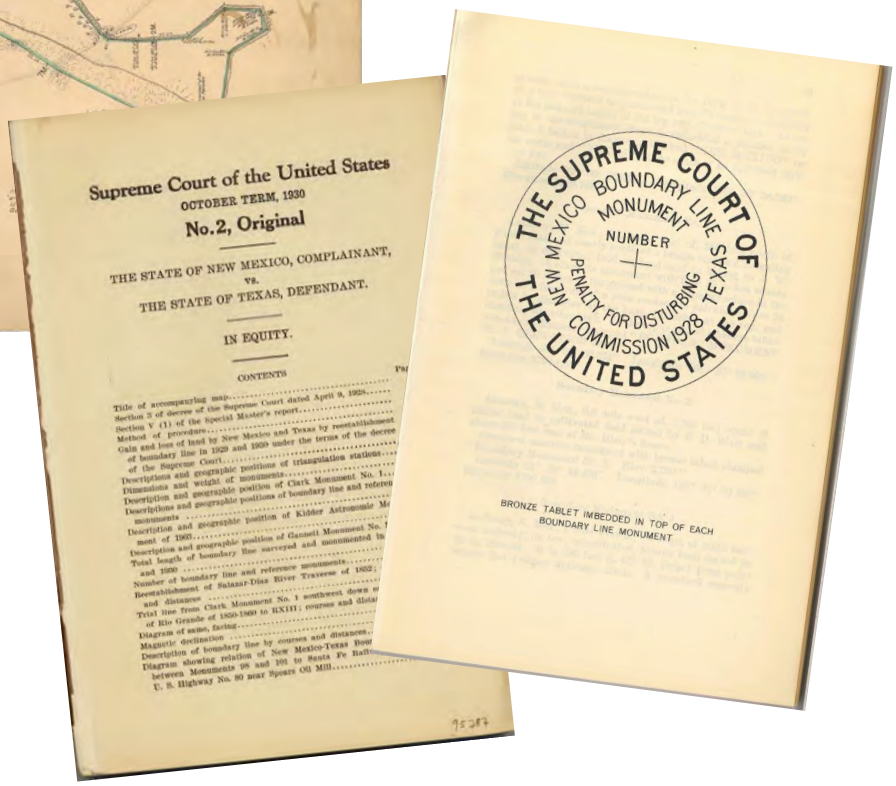
New Mexico/Texas Gannett Monument No. 1



"Map of the Santa Teresa Grant" by Wendell V. Hall, DS.
COURTESY OF GENERAL LAND OFFICE RECORDS

to becoming a State though, New Mexico had to agree to a joint resolution recognizing the survey done by John H. Clark of the 32nd parallel of Latitude.

It wasn't until United States Deputy Surveyor Wendell Hall surveyed the Santa Teresa Grant that it was realized that no one really knew where the Rio Grande existed on September 9, 1850. The survey by Hall placed approximately 2,700 acres in what was thought to be Texas. New Mexico filed suit with the United States Supreme Court on January 31, 1913 asking for a determination where the Rio Grande was on September 9th, 1850. Well known Boston Attorney and author Charles Warren was assigned the position of Special Master. After hearing testimony for a matter of years and after researching and reviewing all pertinent maps the Special Master made his report. In Volume V (1) of his report Special Master Charles Warren states that the Rio Grande as it existed on September 9th, 1850 shall be determined by retracing the John H. Clark Survey and the Salazar – Diaz Survey of 1852. The Special Master could not find copies of the Radziminski Survey so it was dismissed as evidence. Furthermore, against the suggestion by Special Master, the Supreme Court rejected any claim of the position of the Rio Grande by accretion or avulsion. The location of the Rio Grande had to be laid on the ground as it existing on September 9th, 1850 and it was then called upon to have Samuel Stinson Gannett do the job.



Sample page selections from the rare 1930 Supreme Court Document highlighting the survey report by Gannett.
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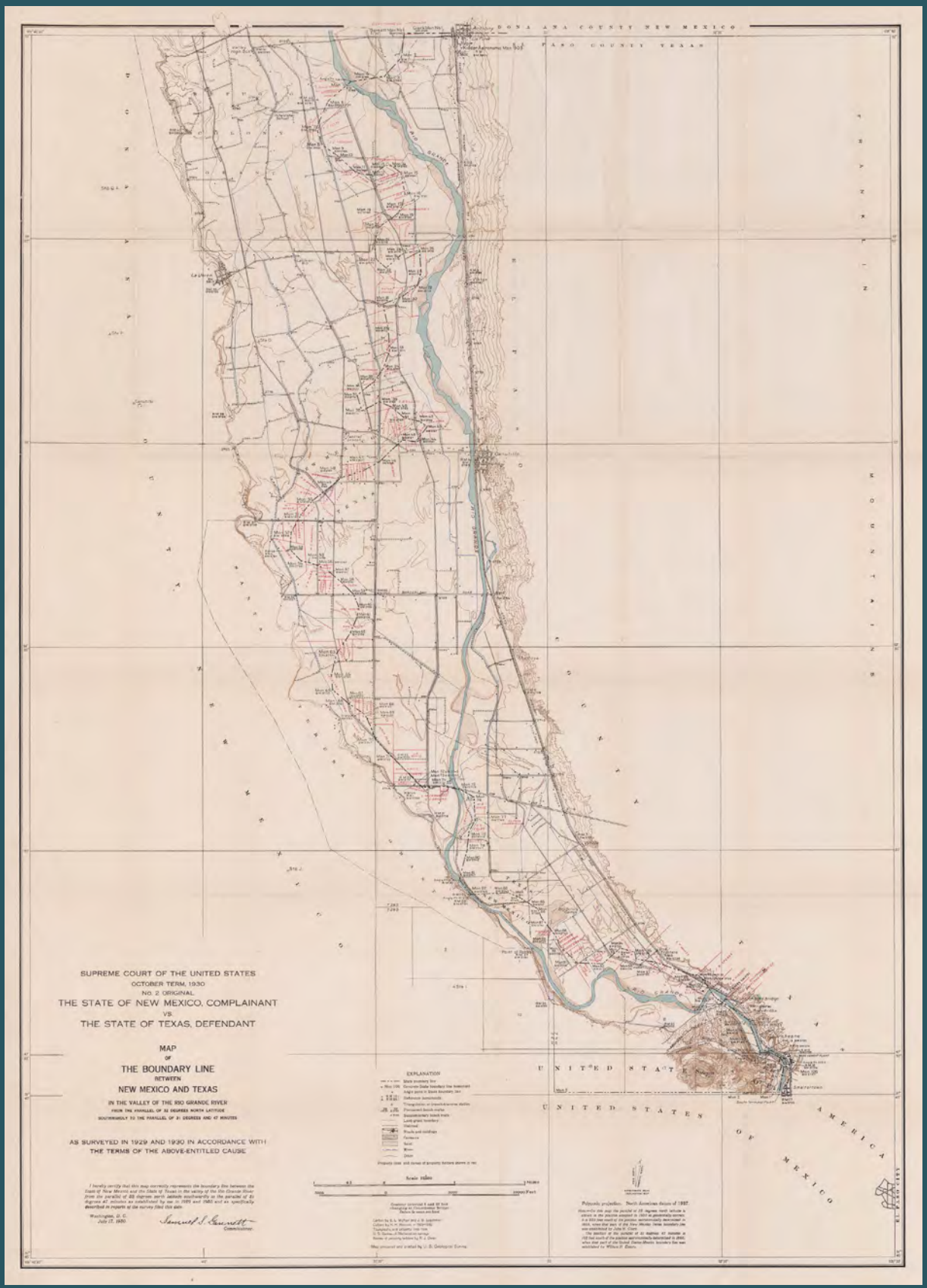
DONA ANA COUNTY NEW MEXICO
EL PASO COUNTY TEXAS
SUPREME COURT OF THE UNITED STATES
OCTOBER TERM, 1930
NO. 2 ORIGINAL
THE STATE OF NEW MEXICO, COMPLAINANT
VS.
THE STATE OF TEXAS, DEFENDANT
MAP
OF
THE BOUNDARY LINE
BETWEEN
NEW MEXICO AND TEXAS
IN THE VALLEY OF THE RIO GRANDE RIVER
FROM THE PARALLEL OF 32 DEGREES NORTH LATITUDE
SOUTHWARDLY TO THE PARALLEL OF 31 DEGREES AND 47 MINUTES
AS SURVEYED IN 1929 AND 1930 IN ACCORDANCE WITH
THE TERMS OF THE ABOVE-ENTITLED CAUSE
Washington, D. C.
July 17, 1930
Commissioner
EXPLANATION
Scale 1:5280
UNITED STATES
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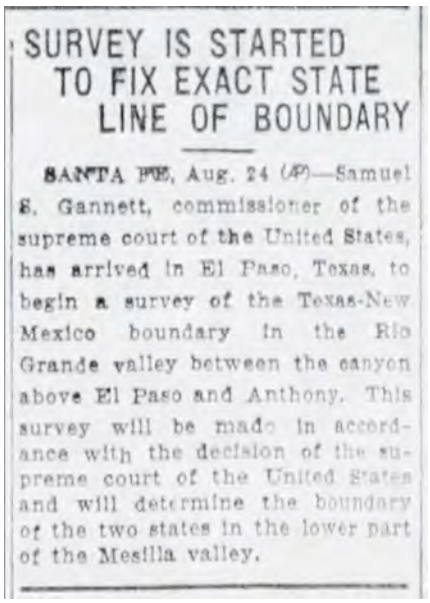
AMERICA

Gannett studied the triangulation notes from both the Clark Survey and the Salazar – Diaz Survey. He started his field work in August of 1929 and it lasted until February of 1930. Gannett and crew first laid out a traverse through the entire valley of the disputed territory. They then tied in the "control monuments" as used in the Salazar – Diaz Survey of 1852. These "control monuments" from 1852 were simply natural objects like high bluffs or "… a well known mountain with a definite sharp summit…" With this they were able to reproduce the triangulation network and prove other known geographic location as used by Salazar and Diaz. The could then calculate where the West bank of the Rio Grande was and then offset it by 150 feet to the East for the centerline. Locations were then chosen for permanent monuments at each angle point, now lying on dry land. In the end 105 concrete monuments were set along 25.17 miles. There were also 45 reference monuments set and 6 permanent triangulation stations established. In the final report to the Supreme Court, Gannett wrote "…may therefore be considered as located within a few feet of the original Salazar-Diaz stations and serve as a check…" Obviously his triangulation work was much tighter as angles were measured four times at each monument along the line. Polaris was also observed every three miles. The distances were measured with a 300 foot steel tape and checked to a 300 foot invar tape every other day. Similar to the monuments set a few years earlier, on the other side of the State, marking the 100th Meridian they were in the shape of a conical frustum 36" long, 8" at the top and 14" at the base. Once again the concrete was molded in galvanized metal and placed on a concrete foundation. A bronze inscribed tablet was then placed on top of the concrete monument. Also similar to the 100th Meridian between Texas and Oklahoma a majority of the field work was completed by Samuel's close friend Eugene L. McNair. McNair had a most impressive career with the United States Geological Survey and was called upon to assist Gannett in multiple high order surveys for the Supreme Court. In September of 1934 while assisting Gannett on the New Hampshire – Vermont state line for the Supreme Court, McNair suddenly passed away at the age of 71.



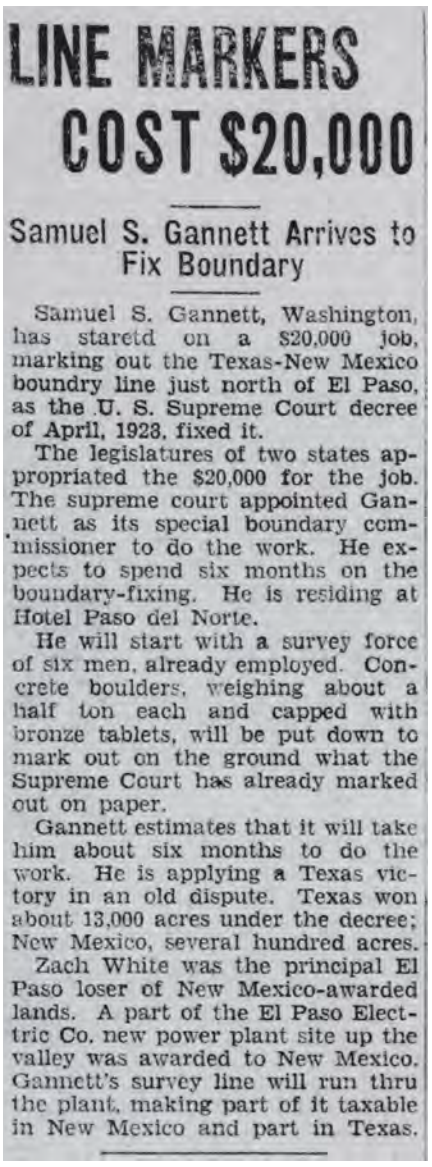
SURVEY IS STARTED TO FIX EXACT STATE LINE OF BOUNDARY

SANTA FE, Aug. 24 (AP)—Samuel S. Gannett, commissioner of the supreme court of the United States, has arrived in El Paso, Texas, to begin a survey of the Texas-New Mexico boundary in the Rio Grande valley between the canyon above El Paso and Anthony. This survey will be made in accordance with the decision of the supreme court of the United States and will determine the boundary of the two states in the lower part of the Mesilla valley.

Albuquerque Journal - August 25, 1929

Once complete, Samuel Stinson Gannet presented his report to the United Stated Supreme Court. This well put together report details the history of the dispute and the instructions by which he did his survey. In detail, Gannett describes his work and the instruments used. He lists each monument, and references, with true bearing and distances to others for future retracement. He also created a highly detailed map of the entire line with contours. This report by Gannett was given to the United States Supreme Court on July 17, 1930 and was quickly approved settling yet another highly disputed line between two adjoining States. And although it may not make sense today, the Rio Grande has been permanently monumented as it was on September 9th, 1850. ■

Note: Special thanks to Kery Greiner, Steve Cobb & Dr. Kurt Wurm and all those who volunteered on the 2005-2006 retracement by the Southern Rio Grande Chapter of the New Mexico Professional Surveyors and the Paso Del Norte Chapter of the Texas Society of Professional Surveyors.



LINE MARKERS COST $20,000

Samuel S. Gannett Arrives to Fix Boundary

Samuel S. Gannett, Washington, has staretd on a $20,000 job, marking out the Texas-New Mexico boundry line just north of El Paso, as the U. S. Supreme Court decree of April, 1928, fixed it.

The legislatures of two states appropriated the $20,000 for the job. The supreme court appointed Gannett as its special boundary commissioner to do the work. He expects to spend six months on the boundary-fixing. He is residing at Hotel Paso del Norte.

He will start with a survey force of six men, already employed. Concrete boulders, weighing about a half ton each and capped with bronze tablets, will be put down to mark out on the ground what the Supreme Court has already marked out on paper.

Gannett estimates that it will take him about six months to do the work. He is applying a Texas victory in an old dispute. Texas won about 13,000 acres under the decree; New Mexico, several hundred acres.

Zach White was the principal El Paso loser of New Mexico-awarded lands. A part of the El Paso Electtric Co. new power plant site up the valley was awarded to New Mexico. Gannett's survey line will run thru the plant, making part of it taxable in New Mexico and part in Texas.

El Paso Evening Post - August 27, 1929

Joseph D. Fenicle, PS is the Chief Surveyor at the Office of the Fulton County Engineer in Wauseon, Ohio. Joe also owns Angular By Nature, LLC a company specializing in Continuing Professional Development for Surveyors and Engineers as well as offering Land Surveying Services across Ohio and Michigan. Joe lives outside of Sand Creek, Michigan on his own active farm with his wife and three young boys.

feedback

Professional Surveyors and Utility Locations

Just a few thoughts that are prompted by your "thought leader" article "Professional Surveyors and Utility Locations."

The laws which prompted "Dig Safe" laws were prompted by the tenuous relationship between utility companies and contractors when excavating in the area of underground utilities.

Prior to instituting laws which specifically addressed the problem, the adjudication by the courts when a contractor "dug" up wires or pipes often depended on a judge deciding whether a utility company or contractor was responsible, based on a simple theory. The theory was: If a contractor called a utility company ahead of time, and the utility company did not respond, the utility company was responsible for damages. If the contractor dug without notifying the utility company, the contractor was responsible for damages.

In New England, the laws and rules regarding digging in the area of underground utilities began in the early 1970's and are constantly being revised and updated.

In Maine, the "Dig Safe" Laws and Rules take up 39 pages and have 50 Sections, with more than 140 subsections. NO WHERE in those 39 pages are the words: Surveyor, Professional Surveyor or Land Surveyor used! I am referring to the 2014 Laws and Rules.

On April 17, 2018, the Massachusetts legislature recommended the following: that in Chapter 82, Section 5, Section 40B, "insert after the words "the excavator" the following words:—"or Professional Surveyor." In other words, that portion would then read: "Within 72 hours, exclusive of Saturdays, Sundays, and legal holidays, from the time the initial notice is received by the system, or at such time as the company and the excavator or Professional Land Surveyor agree, such company shall respond to the initial notice…"

Back in 2001, Knud Hermansen wrote a brief two page article titled "Digsafe—Surveyors Beware!" It came after many angry utility companies, contractors and surveyors argued about who was responsible for digging up underground utilities.

Thanks for reminding surveyors about this important subject and how it affects them.

David C. Garcelon
Harpswell, Maine

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Contact us via *www.amerisurv.com,* or send a letter to: The American Surveyor, 7820-B Wormans Mill Road, #236 Frederick, MD 21701. We reserve the right to edit letters for clarity and length. ■

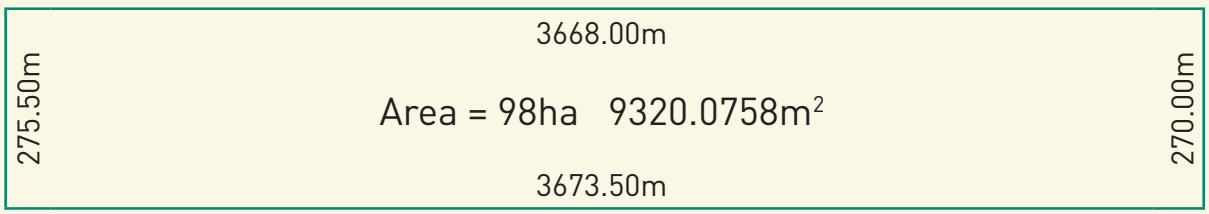
test yourself

Straight Out of Argentina

I am a land surveyor from Argentina and I need your help. I have one parcel with only four distances and an area, and I need to know the four interior angles. Please help. ■

For the solution to this problem (and much more), please visit our website at: *www.amerisurv.com*. Good luck!

Dave Lindell, PS, retired after 36 1/2 years with the City of Los Angeles. He keeps surveying part time to stay busy and keep out of trouble. Dave can be reached at *dllindell@msn.com*.



Thought Leader, *continued from page 2*

your client base, know and appreciate your services… and are willing to pay for them? And what have you done to enhance the image of surveyors on a daily basis?

Now comes the rant. What do they see first whether clients or not; obviously the field crew or now the field person with his magic stick listening to the stars. Throughout my whole career I was appalled at how field surveyors dressed. The worst was in Phoenix about 2001 watching a field person in ragged cutoffs, a Grateful Dead tee shirt and flip flops working in a busy intersection. (Yeah, I know it's hot). How many people saw this guy compared to the RLS in the office in business casual or coat and tie? Case rested. You can still dress professionally for the field whether it's cold or hot. The one thing I have seen in the last few years is the vehicles look pretty good. No more USFS green and gray rejects with a wooden turkey roost box and flagging leaking out the back. So how would it be if you stepped out of your vehicle and looked as good as it does? What's the old saw? You never have a second chance to make a first impression. Again, what have you done to promote the profession past, present and future to non-surveyors?

I don't mean the students and schools that you visit, that's a very good thing, but how many of them become paying clients? An individual goes to the dentist every three or six months and maybe will buy a house two or three times and a car every three to seven years. *They may never need a surveyor in their lifetime.*

Well, the film is still in the package and will stay there as a reminder of what was and the grand task of its creation in simpler times. As Geronimo is alleged to have said, "Our time is over." Well, mine is as an active surveyor, but yours isn't. If you want a fifty year career you had better pay attention to the things outside your little circle/comfort zone and your still secret society. ■

John Stock is a retired surveyor living in Green Valley, Arizona. He closed a fifty year career in both private and public sectors in 2016. He has worked extensively in both rectangular and colonial states and given seminars and schools throughout the nation. John was privileged to serve NSPS as a Board of Governors delegate, director and President. John continues to write for survey periodicals and maintains contacts with the many colleagues in the profession that he has encountered and had the good fortune to know.

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Unfinished Business

It is the start of December as I write this, when I had expected to provide updates on the reauthorization of the National Flood Insurance Program (NFIP) and a new Elevation Certificate, the current forms of both having expired on November 30. Instead, the NFIP was extended one week and awaits re-reauthorization, and the Elevation Certificate is facing an indeterminate extension, with recommended updates to it on indefinite hold. In the background, a partial government shutdown looms as a possibility. Rather than tread water (pun intended) with conjectures, let's see what we actually do have.

Even before these two lapses, another halt to progress came in the form of expired terms for more than half of the Technical Mapping Advisory Council to FEMA (TMAC) on October 1. The reason for this is not FEMA, but due to backlog in the White House office that vets all candidates for positions on advisory committees and councils to various federal agencies. Some TMAC candidates to replace members with completed terms have been waiting since 2017 for authorization to participate as full members, thereby disenfranchising some stakeholders for a year. Because terms for TMAC members expire for half the Council in alternating years (to assure some continuity), half expired this October 1—including mine on behalf of the National Society of Professional Surveyors. My replacement, whose paperwork was completed in time for the spring 2018 deadline, is among many others waiting to step up to take their places at the table.

As a result, TMAC has not had a quorum since September 30 and therefore is unable to meet or to complete its 2018 Annual Report and recommendations. The loss of momentum will be difficult to overcome, and meanwhile FEMA waits for the advice it requested relating to flood insurance coverage, to uncertainty and precision in flood models and studies, and to prioritizing unmapped areas. Extension of expired terms to allow completion of this work while awaiting approval of new members can't happen without Congressional action.

The Elevation Certificate was on track for update before its November 2018 expiration with a working committee that began meeting in November 2017. Stakeholders from the flood insurance, floodplain management, and design professions met by phone to make the form better fulfill needs of its various users by addressing discrepancies between form and instructions, technical glitches in completing FEMA's fillable PDF, clarification of floodplain management objectives in the instructions, and more. But in late October 2018 we were all thanked for our input and informed that the workgroup had been halted with "a possibility" of resuming "sometime in late 2019." No further explanation has emerged.

The usual process for handling impending expirations is that the agency responsible for the form publishes a request for comments in the Federal Register. FEMA did this on March 3, 2018, asking that comments be submitted by May 8. Having received only one response by that time, and that one being an approval of the current form with no further suggestions, FEMA published another notice on June 29, extending the deadline for the comment period to July 30. What happened between then and the October suspension of the workgroup is somewhere in the Black Hole.

The outcome is that the expired Elevation Certificate is the one and only document available. What should have happened immediately was a formal notice from FEMA to ignore the date at the upper right corner of the form until some specified date, when presumably a replacement would be available. Currently we are awaiting an official bulletin from FEMA to effectuate this extension. We have been through this maze before, with the immediately prior form having required several extensions and then use after the expiration of the last published extension. For now, we should keep using the present form, being prepared to explain to clients that the November 30, 2018 expiration date is to be ignored due to lack of a new document.

Finally, some may ask why reauthorization of the NFIP is important, with the expansion of flood insurance availability through private companies. Aside from the consistency that the NFIP offers consumers (for comparison, think about how difficult it is to decide between health care insurance plans—what's covered and what's not, for what fee), there are other aspects of the Program that touch the rest of our lives.

Hazard Mitigation Grants help communities prepare ahead of disasters to reduce risk. Technical guidance helps us design and construct in safer ways, whether by structure location, materials used, foundation type, elevation, or protection of service facilities. And among the feet on the ground after a disaster are FEMA's, helping process loans, grants, and claims to guide individuals and communities onto the road to recovery. Sure, the NFIP does need improvements. But sudden eradication is not in the best interests of our nation. ■

Post script: *After writing this, Congress kicked the NFIP can down the road on December 21 to now expire May 31, 2019. No word on the Elevation Certificate. Another government shutdown is possible.*

Wendy Lathrop is licensed as a Professional Land Surveyor in NJ, PA, DE, and MD, and has been involved since 1974 in surveying projects ranging from construction to boundary to environmental land use disputes. She is a Professional Planner in NJ, and a Certified Floodplain Manager through ASFPM.

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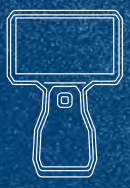
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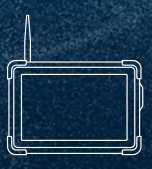
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