

SIDE SHOTS

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Dear Fellow Members,

June was exceptionally sunny, hot and dry this year. Larry Connolly and Dexter Brinker recently reminded me of the potentially life-threatening sun-related hazards we face on Colorado's elevated plateau. So, I would like to pass on their reminder to all of our members that are still lucky enough to work outdoors. Please remember to use adequate sun protection whenever you are outside. Many of our members have suffered from overexposure to the sun's damaging rays. Sunblock and yearly check-ups can reduce and/or mitigate sun damage.

Summer is also typically the busiest time of the year for our members, which can be stressful. In our continual efforts to reconcile our State's laws and requirements with our client's desires and pocketbooks, the stress level of the professional surveyor can be elevated. Add in market forces and managing a business, and the stress level can be overwhelming. Please remember to do your best to offset work-induced stress with sufficient stress reducing activities. Whether it is practicing a hobby or spending time with your friends and family, reducing your stress level will have life long benefits. Looking back from North of 60 years old, I could have done a better job with both of the above.

At the last Board of Directors meeting in Durango, one of the items discussed was whether to add space at the PLSC library to house a mini-museum. This would be a nice way to preserve old equipment and other survey related items so the new generation of surveyors could see the equipment that was used by previous generations, and understand what 'pulling chain' meant. We are currently exploring what the cost for the additional space would be. Geof Stephenson and Gene Kooper discussed organizing statewide access to items in the library, possibly through internet access and/or mailing of library items; and Tom Adams submitted a suggestion of archiving old recorded and unrecorded plats, Right of Way maps, railroad maps and other items in the library. Warren Ward, who could not attend the Durango Board Meeting, submitted a written report about the Mentoring Program, noting that it has gained positive attention from other delegates at the NSPS meetings he attends as a representative of PLSC, Inc.

A comprehensive Land Surveying Refresher Course is again being offered for 2007. This course will run from January through March, and offers a review and self-study plan for those taking the NCEES/Colorado exam(s). The course is specifically designed to aid candidates in developing and expanding exam-taking proficiencies. Specific information on this course is printed later in this issue. For additional information, please contact Randy Bloom at randy_bloom@co.blm.gov or 303-239-3827.

Reminder: Please check with Art Hipp (303-424-8156) as to whether your dues are current. We have a large number of members that have not yet paid their 2006 dues (306 out of 672), and will have to be dropped if not brought current. Art will be making calls to late members.

One sad item to report: Many of us know or at least know of Walt Robillard as a prominent figure in our profession. Sadly, his wife Sara passed away on Sunday, July 2nd. I would like to extend my condolences to Walt and to those who knew Walt and his wife.

The next Board of Directors meeting is scheduled for Friday September 8th in conjunction with the Southern Chapter conferences. I hope to see you all there.

Sincerely,
 John B. Guyton, PLS



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*Side Shots is the official publication of the Professional Land Surveyors of Colorado, Inc.
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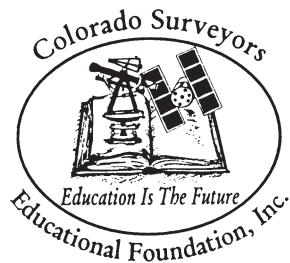
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The Professional Land Surveyors of Colorado, Inc. (PLSC) recently entered into a Partnership Agreement with Metropolitan State College of Denver.

The agreement will benefit everyone in the real estate and surveying communities who depend on quality surveying work to help their businesses thrive.

As part of the agreement, funding will be provided to Metro on behalf of the school's Surveying and Mapping Program. The funding will help the program to achieve the highest academic standards and ensure quality surveying work in Colorado for years to come.

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THE EDITOR SEZ

Greetings fellow surveyors and friends:

In this issue we are privileged to have several fine articles of interest. As usual, President Guyton brings us up to date on items of importance in his president's letter and the report of the meeting of the Western



Art Hipp

Federation of Professional Surveyors which was recently held in Alaska. This is a very dynamic group which I was privileged to be part of for several years. He tells us what the important things are that are happening state by state.

Diana Askew has written a fascinating article dealing with some archeological subjects in the early days of what is now New Mexico. We thank her for sharing her experiences with us.

Gene Kooper has a very interesting article dealing with Mineral Survey boundaries — some of which may be controversial but important to all of us who deal with Mineral Survey Boundary problems. We thank him for his analysis of this particular problem.

There is a final schedule of upcoming GIS meeting events and for all of us an article explaining what the GIS is and why it is so important to all of us who deal with boundary problems and records. Thanks to Dan Smith who wrote the article.

Lastly, I have been busy making telephone calls (over 300) trying to get members who are delinquent to pay their dues. I am always surprised that members forget that their dues lapse on April 1st following the membership year. Fortunately, the response has been good and many delinquent members were apologetic when I called. We don't mean to harass you, but we do need payment in order to cover our expenses and proceed with ongoing projects.

I hope you are having a busy and profitable work season and that the triple digit temperatures are not causing you a lot of problems. It will cool off.

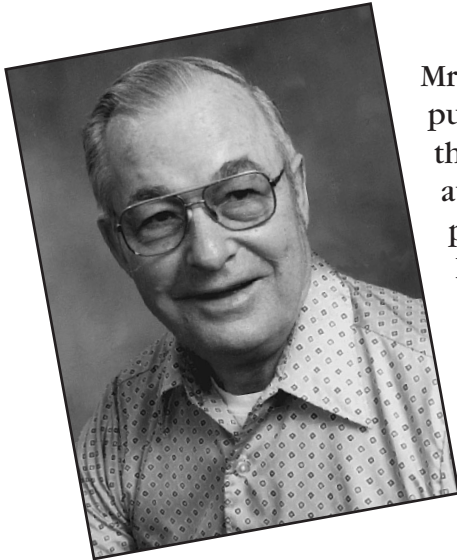
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Published by the Colorado Professional Land Surveyors Educational Foundation, Inc., a non-profit foundation, Initial Points of the Rectangular Survey System is undertaken in the spirit of, and dedication to, Mr. White's remarkable contributions to his field. Net proceeds from its sale will be returned to the educational foundation.

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SWC/PLSC

The Southwest Chapter of the Professional Land Surveyors of Colorado held their annual Four Corners Area Survey seminar on June 9th and 10th on the Fort Lewis College campus. Participation was strong and the speakers were well attended.

The PLSC Board of Directors conducted their meeting this year following the seminar. It was an honor to be able to provide a venue for this meeting and look forward to the opportunity in the future.

I would like to thank all of the speakers for their hard work and great presentations. A special thanks goes out to chapter members Dave Freienmuth, Larry Connolly, Tom Au, and Dave Seiler and the other members of the Southwest Chapter for all of their efforts and hard work in coordinating this year's seminar.

The SW Chapter will continue

with our bi-monthly meetings in August and will be featuring speakers from the different agencies in the region along with professionals from the survey and mapping community throughout the year.

Respectfully submitted,
Parker Newby, PLS
Southwest Chapter President

CCPS

The summer months are here and we find ourselves trying to balance busy work schedules with our duties as directors. Our thoughts are with Diana Askew. Di has had to take some time off work to deal with some health issues. We look forward to her return. Di continues to take on the responsibilities of treasurer for the Central Chapter until we can find a replacement.

At our last directors meeting at the office of Lund Partnership on July 6th, we began discussions

about speakers and topics for our upcoming February conference. If you have suggestions about the conference so it will better meet your needs please feel free to contact a CCPS director or myself.

At the suggestion of Randy Bloom, the Central Chapter has initiated the CCPS Adopt a High School program. The intent of the program is for a surveyor to volunteer to work with a high school to introduce mathematical and technical aspects of land surveying. The CCPS currently has volunteers to work with Thunder Ridge High School and Jefferson County Open School. For more information, or if any of you are interested in participating please contact Randy or myself.

CCPS and the Metropolitan State College of Denver Surveying and Mapping Program in cooperation with the Colorado School of

Continued page 8

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Gene Kooper will begin this years mentoring program on Wednesday, August 30 and they will meet every other Wednesday. Please watch the CCPS News Letter for a schedule of topics and locations. We look forward to seeing many of you at our upcoming general meetings in August, October and January.

Gary Leak PLS
President CCPS

SCPLS

Our Chapter membership meeting was held April 18th at the Royal Gorge Field Office in Canon City. The program covered survey records available at the public area, information available online, and the geographic coordinate database. The meeting was well attended with 22 present. Thanks to David Parker, Anthony Mule, Dave Vinton, and Joseph Velasques, for a job well done.

The Paul Grout Golf Tournament is scheduled for August

12, 2006, at Hollydot Golf Course (Colorado City). Flyers have been mailed out. See you there for a fun round of golf and awards ceremony to follow. Special thanks to Randy Reeves for organizing the event.

The September workshop is scheduled for September 8th and 9th in Colorado Springs at the North Campus of Pikes Peak Community College. The announcement will be mailed out soon.

The "Bill McComber Memorial Mentoring Courses" held in Colorado Springs was a success this year. In addition to Gab Neunzert, we had volunteer instructors including Dave Pehr, J.B. Guyton, Joe Broberg, Charlie Tucker, Doyle Abrahamson and Gene Kooper. A special thanks to all who helped. New sessions will begin in the Fall, and anyone interested in participating should contact Tom Adams at tom@plsc.net or talk to one of the chapter officers or directors. We are seeking people to help teach courses next year. Any of Gaby's material is available to teach some of his courses, or if you have a specialty you would like to share your knowledge in, please let us know.

Terry R. Maw, PLS
President, SCPLS

WCLS

We held our last meeting on July 12 at the City of Grand

Junction's facility. It was another good meeting with Mark Young (of Mesa County Engineering Department), in attendance. He went over the proposed changes to the Requirements for Subdivision Plats, Exemption Plats and Deeds. It was nice to see Mesa County willing to let the WCLS have some input into their requirements before they present the final draft to the department heads.

Some of the recommendations that the plat committee presented are as follows:

1. That the professional surveyor is qualified to prepared easements and real property descriptions, but it is the attorney who should prepare the deed.

2. It was recommended that a vehicle be created to relate and insure non-public easement grants are recorded as stated in the plat notes.

3. It was also suggested that a requirement to show adjacent plat- ted easements to the locus property be dropped.

We have also scheduled Wendy Lathrop to speak at our next spring seminar.

Our next meeting will be held on Wednesday, September 13. We are looking forward to see you there and enjoying the good discussions.

Sincerely,
Les Doehling
President, WCLS

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Administered by: Lisa Isom

The Business Concern: Long Term Care Insurance as a Benefit

As I discussed in the last issue of Sideshots, we now have available LTC (Long Term Care) for you as additional Benefit of the program.

At home and in the workforce, long-term care is emerging as one of the critical issues of our time, and employers have a key role to play through education. Dealing with long-term care needs can be an emotional and financially significant life event. Almost a quarter of U.S. households – 22 million – are already involved in caring for a relative or friend who is 50 or older, according to the non-profit National Alliance for Caregiving (“A federal case for LTC.” Employee Benefit News. 01/01/03). These individuals, if currently working, may have little time available for specialized care giving, and the additional responsibility.

Hidden impacts of care giving responsibilities could have an impact in the workplace also, due to emergencies and phone calls, absenteeism, adjusted schedules, increased need for time off, decreased willingness to relocate and travel, and increased stress, which often may lead to employee health-related problems and fatigue.

Long-term care insurance is one of the newest employee benefits being made available to employees by businesses to attract and retain top performers, and is a valuable addition to any benefits portfolio. Benefits can be offered selectively. Employers may also determine different premium contribution levels for different groups of employees, either employee pay all, on a cost-shared basis and/or employer pay all. By extending coverage to family members, employers can make it easier for workers to manage care giving responsibilities and remain productive on the job.

Tax-qualified long-term care insurance occupies a special place in the tax code. When an employer pays for coverage for employees, either for a selected group or for all, the employer might be able to deduct the premium payments. This is a plan that can be customized to fit an employer’s specific criteria, and it might offer a tax deduction for the employer without creating additional taxable income for the employee. You should consult a tax professional for more information related to their particular situation.

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A Misguided General Land Office Policy

by Gene Kooper

The May Side Shots issue included the text of a speech given by Congressman Franklin Brooks which provided some background concerning the Act of April 28, 1904. This legislation mandated that when a discrepancy occurs between the patent description and the original undisturbed monuments, the monuments shall constitute the highest authority as to the mineral lands that were actually patented. Congress was urged to action because the General Land Office had for the previous five years enforced a policy that the patent description was superior to the monuments in defining which mineral lands were included in a patent. This article will delve into the details of the GLO's ill-conceived policy by looking at the mineral survey that triggered the change. Analysis of the original and amended surveys reveals the logic used to formulate the policy and the particulars of its implementation.

By happenstance, while paging through several editions of *Instructions to U.S. Deputy Mineral Surveyors for the District of Colorado* housed in the Mining History Archive at the Arthur Lakes Library in Golden, Colorado, I discovered a folded GLO circular tucked into an 1895 manual originally owned by Jason Dyson, of Silverton, CO. The circular, dated June 20, 1899 was issued by the Colorado Surveyor General, Mr. C. C. Goodale. The circular included an excerpt from a June 17, 1899 land department letter sent by the GLO Commissioner, Mr. Binger Hermann. The original letter from the Commissioner was found in the records of the Colorado BLM housed at the Denver National Archives by searching on the June 17 date.

During the Commissioner's

review of the patent application for mineral entry 527 for the Silver Pine, Edison and Portia lode claims, survey No. 12577, discrepancies were discovered for the Hood Lode, a senior conflicting claim. The location of the Hood Lode as approved and patented, and later amended did not agree with its staked location on the ground as determined by the deputy surveyor conducting the mineral survey of the Silver Pine, Edison and Portia lodes. The Commissioner noted that the Colorado Surveyor General had exceeded his authority by approving the mineral survey that included alleged discrepancies with the record. He required the Surveyor General to fully explain his actions. In reply Mr. Goodale stated, "that this office at that time, appears to have followed a practice in vogue for years, to wit: to describe the relative positions of the conflicting and adjacent surveys, upon the plats and in the field notes, as they actually exist upon the ground, without regard to whether patent had issued thereon or not and regardless as to whether these positions agree with the description of the land embraced in the patent."

Upon receipt of Mr. Goodale's explanation, the Commissioner issued the following "cease and desist" order and created a new policy that held sway for mineral surveys until the Act of April 28, 1904.

The practice referred to by you of disregarding the records of approved conflicting surveys, if you have not already discontinued, you will in the future discontinue accepting this as authority therefor.

When a mining claim has been surveyed and patented in accordance therewith, the land described therein is disposed of and so long as the patent is outstanding, the

jurisdiction of the Department in regard to that particular tract is terminated. It therefore follows that land thus patented cannot be properly included in a subsequent patent, merely because years afterwards a deputy mineral surveyor in making a subsequent survey reports to have found the true corners of the old survey to occupy a different position from that reported in the survey which was the basis for patent of the old claim. And the same thing is true as to reported discrepancies as to the length and courses of lines of prior approved surveys.

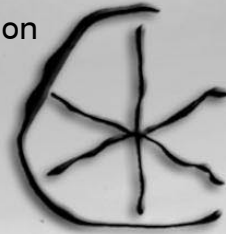
Where such a state of things actually exists the owner of the new claim applied for, who desires to include an area in his claim, conveyed in a patent of an older claim, which as a matter of fact is not embraced in the lines of the old claim as staked upon the ground, should procure the surrender of the old patent by the proper method, through the courts if necessary, and then show in a new patent of the old claim its true position as staked and thus eliminate from the patent the areas desired not in conflict.

The Commissioner ordered an amended survey for the Silver Pine, Edison and Portia lode claims (survey No. 12577) in which the new policy change was to be followed. The mineral lands surveyed are in the Griffith Mining District, Mineral District No. 2 and are located on the slope of Woodchuck Mountain, which is to the southeast of and overlooks Georgetown, Colorado. In addition to the three claims that comprise survey No. 12577, there are 13 previous mineral surveys that have areas of conflict with survey No. 12577. The table below lists the survey number, claim names and dates of patent, if applicable, for the claims in conflict with

Continued page 13

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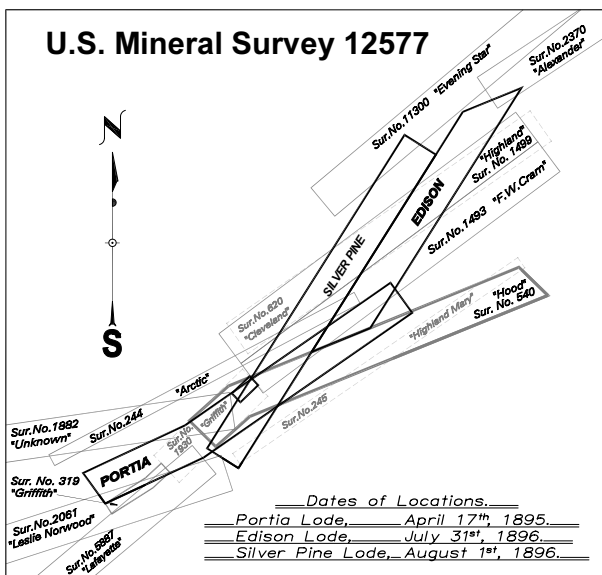


CORNER continued

survey No. 12577.

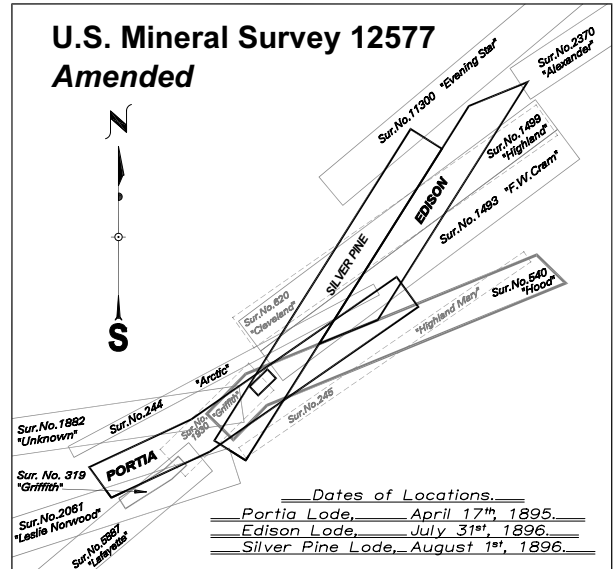
Survey No.	Lode Name	Patent Date
244	Arctic	Sept. 19, 1881
245	Highland Mary	Abandoned
319	Griffith	Nov. 20, 1875
540	Hood	June 15, 1882
620	Cleveland	Abandoned
1493	F.W. Cram	May 15, 1883
1499	Highland	Sept. 7, 1887
1882	Unknown	Oct. 1, 1884
1930	Griffith	Abandoned
2061	Leslie Norwood	Aug. 19, 1887
2370	Alexander	Nov. 20, 1891
5887	Lafayette	Jan. 8, 1892
11300	Evening Star	Oct. 2, 1897

Four simplified drawings are included below to aid in understanding the relationships between the various lode claims depicted in the original and amended surveys. The first drawing shows the actual positions of all the claims as surveyed by U.S. Deputy Mineral Surveyor, Frank Maxwell. The three claims that were abandoned are depicted with dashed, gray lines.



The next drawing shows the surveyed positions of the Silver Pine, Edison and Portia lodes with the patented positions of the ten senior conflicting claims, and the surveyed positions of the abandoned claims Highland Mary, Cleveland and Griffith (survey No. 1930). One of the requirements in conducting a mineral survey is to give a connection between corner No. 1 of the survey and some corner of the public survey, provided that an existing section or quarter-section corner is within two miles of the claim. All the senior claims were tied to the northeast corner of Section 5, T. 4 S., R. 74 W., which was approximately 9200 feet to the north of the claims. To properly place the senior claims in their patented positions, Mr. Maxwell was required in the amended survey to make an accurate connection to the said section corner. Holding the positions of the senior claims as shown in the amended survey, the section corner ties

(as shown on the approved plats) were compared to Mr. Maxwell's surveyed position of the section corner. Eight out of the ten ties fell within a radius of 0.04 feet from Mr. Maxwell's surveyed position, showing that he was a very proficient and precise calculator.

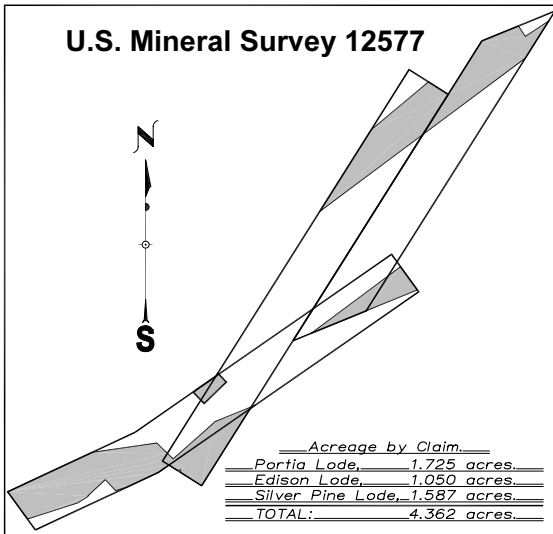


A cursory comparison between the original and amended surveys shows some very large differences between the two surveys. Some of the previously patented claims "moved" as much as 120 feet from their surveyed locations to what is defined by their patent descriptions. For example, the original plat shows that the southwest corner of the Portia Lode is coincident with the northwest corner of the Griffith Lode (survey No. 319), whereas the amended plat shows them to be approximately 32 feet apart. The original field notes state that the corner of the Portia is **identical** to the corner of the Griffith, being a "+" mark chiseled in a 50-foot tall rock outcrop.

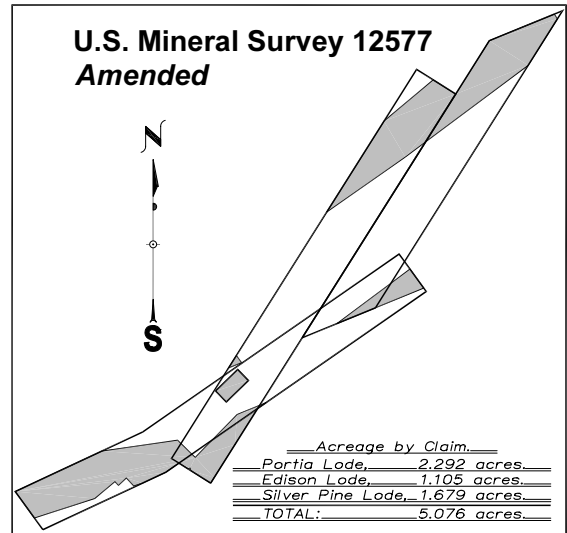
Of particular interest are the locations of the three lode claims Highland Mary, Cleveland and Griffith (survey No. 1930) lodes. They occupy the same position in the original and amended surveys, because they never went to patent. Deputy Maxwell gleefully placed the following note in the amended field notes "Survey No. 245, Highland Mary lode, Survey No. 620 Cleveland lode, and Survey No. 1930 Griffith lode, are shown in these field notes as they exist upon the ground, relative to this survey, being all abandoned claims."

The last two sketches show the areas that were to be conveyed based on the original and amended surveys respectively. The geometries are quite different due to the differences in the senior conflicting claim positions in the two surveys. One could argue that the amended survey was merely an office and drafting exercise, not an actual survey. Regardless of what you call it, the amended survey "created" one more area and an extra 0.714 acres from the original survey.

Continued page 14



any of those 4500 mineral surveys with only the patented position of senior conflicting claims shown on the plat can create some entertaining ambiguities.



Today's land surveyor would not have too much difficulty comprehending the administrative rules that were followed in the above mineral surveys. Having both the original and amended field notes and plats permits the retracement surveyor to unravel what was actually done in the field from the artistic license depicted on the amended plat. However, during the five years that this GLO policy was in effect, there were upwards of 4500 mineral surveys approved in Colorado alone. Retracing

Additional and auxiliary information including color PDF versions of the original and amended survey plats and copies of the GLO correspondence are available from the author by emailing him at ekooper@uswest.net or by contacting him at Lund Partnership in Lakewood, Colorado.



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(See reverse side of this form for definition of membership categories)

Colorado Registration Number _____

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(See reverse side of this form for a list of standing committees)

I hereby make application for membership in the Professional Land Surveyors of Colorado, Inc. and agree to abide by the Constitution and By-Lays of the organization:

Date _____ Signature _____

Amount submitted with this application (there is no initiation fee): \$

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May we send you an A.C.S. M. membership application? Yes No

PROFESSIONAL LAND SURVEYORS OF COLORADO, INC.

Purpose

The purpose of this organization shall be to improve the profession of Land Surveying in Colorado. (Article II Constitution)

Membership

Voting Member — Any person who is a registered land surveyor in the State of Colorado, and whose registration is in full effect, shall upon payment of \$75 annual dues, be a voting member of P.L.S.C., Inc. and as such shall have full voting and office holding privileges. (Article IA1 By-Laws)

Associate Member — Any person who is interested in land surveying shall, upon payment of \$55 annual dues, be an associate member of P.L.S.C., Inc., but shall have no voting or office holding privileges. (Article IA2 By-Laws)

Student Member — Any undergraduate student who is interested in land surveying shall, upon payment of \$15 annual dues, be a student member of P.L.S.C., Inc., but shall have no voting or office holding privileges. (Article IA3 By-Laws) Individuals holding a Colorado PLS or PE-PLS registration are not eligible for this class of membership.

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Sustaining Member — Any person or firm engaged in a business related to land surveying or interested in the land surveying profession shall, upon contribution of \$200 annually, be a sustaining member of P.L.S.C., Inc., but shall have no voting or office holding privileges. (Article IA4 By-Laws)

Dues—Dues shall be due and payable as of January 1st for the coming year and shall be delinquent if not paid by April 1st following. Membership rights cease when dues become delinquent. (Article IB By-Laws)

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- | | |
|--|---|
| <input type="checkbox"/> Legislation | <input type="checkbox"/> Nominations and Elections |
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| <input type="checkbox"/> Ethics and Fair Practices | <input type="checkbox"/> Survey Monuments and Records Standards |

Meetings

Regular meetings or other sanctioned activities shall normally be on the 3rd Saturday of February, May, August, and November at a place designated by the Executive Board. The February meeting shall be the annual meeting of the organization. (Article VI A & B By-Laws)

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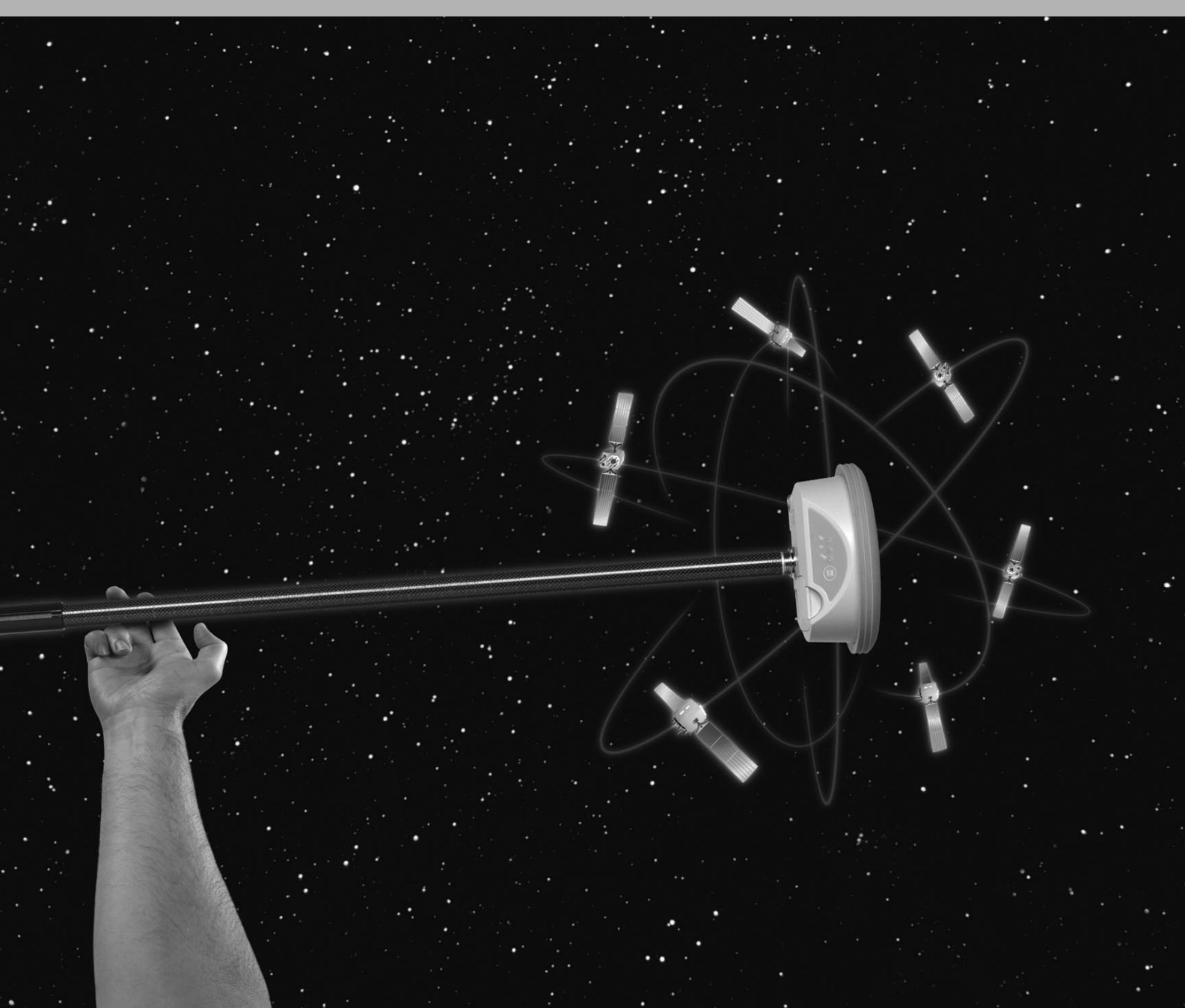
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McComber Mentoring Program

The McComber Mentoring program is on vacation!

Plans are for all three chapters to restart the Mentoring program for technicians again in late August or early September. The Southern chapter is considering offering "business or management" type sessions; for the Central Chapter more "legal" and maybe a "contouring" are in store. The Northern Chapter is looking at "vertical curves," as well as topics into "property descriptions," etc.

HELP — There are enough subjects on hand to run the program for many more sessions, but the input from future and existing participants is needed to make the topics as user friendly as possible. Any suggestions of interest to an individual or a group of technicians are welcome. Either contact one of the individuals below, or Gaby M. Neunzert at gneunzer@mines.edu.

Southern Chapter — Colorado Springs

For more information contact Tom Adams
tom.adams@dot.state.co.us
Cell: 719-251-7980
Office: 719-546-5454
Toll Free: 877-546-6283

Central Chapter - Denver Area

For more information contact:
Gene Kooper
ekooper@uswest.net
Office: 303-989-1461

Northern Chapter — Loveland Area

For more information contact:
Steve Variano
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Meeting Report: Western Federation of Professional Surveyors

Board of Director's Meeting – June 24, 2006, Anchorage, AK

by: John B. Guyton, PLS, Colorado Delegate

Selected highlights from *State Society Reports*:

Alaska: 2007 Conference is scheduled for March 19-23, 2007 in Fairbanks... Partial resolution with the Alaska Department of Environmental Conservation achieved, they have agreed to overstamp all survey lot as-builts with a notice stating they may not be copied. This should stop real estate agents from getting copies of lot surveys and using them at closings. Copyright infringement of Survey documents is a national issue and it can only be resolved through national effort, with NSPS speaking as the common voice... Continuing education requirements modified to remove requirement of 4 hours of 'ethics' education... Legislative items – HB 318, Limitation of Eminent Domain has passed; HB 377, Exemption re: Res. Bldg. Drawings & Specs was passed (allows a home builder to build up to three stories without having to hire an architect or structural engineer) has passed with language that excludes this exemption from areas of high winds.

Arizona: APLS is continuing work to maintain the two year Survey Program at Phoenix College... is sponsoring workshops to help persons interested in taking the NCEES and Arizona exams... their Board of Registration has acted to refine, define and clarify several issues relating to the practice of surveying – did clarify issue of 'contracts', determined that a surveyor MUST have an executed agreement prior to commencing work on any project... were successful in securing funding for Height Modernization this year.

California: CLSA membership continues to grow and is currently at

2187.... The California Surveyor-CLSA's quarterly magazine for all members, non-member resident surveyors, and suppliers has a circulation of 4800, doubling the advertising in the last two years allowed a move to full color, and the cost of production is not offset by ad revenue... CLSA has developed a recruitment video, printed materials and a career in surveying website. Once finalized, mailings will be sent to HS math departments and career centers in California.

Colorado: Mentoring sessions continue to be successful, now with four regional sessions, Western Slope, Southern/Colorado Springs, Central/Denver and Northern/Loveland... 2006 Land Surveyor Refresher Course was well attended, will be offered again in 2007... Colorado State Board of Licensure for Professional Engineers and Professional Land Surveyors will be adding Professional Architects to their area of oversight... current membership stands at 624.

Idaho: At their regular meeting, the Cadastral Technical Working Group proposed reviving the State Resident Cartographer position, and asked the Idaho Board of Professional Engineers and Land Surveyors and the ISPLS for their support and assistance... the proposed change to 55-1904 - Records of Survey, regarding requirements for filing a Record of Survey that adds "...Results in the setting of monuments at corners of record which were not previously monumented.." passed effective 7/1/06... ISPLS and Board of Registration proposed revisions to 54-1230 regarding right of entry.

Montana: MARLS 2007 Annual Meeting will be held in Billings and

hosted by the Northeast Chapter – Theme will be "Monuments of the Past to Protect the Future"... MARLS and NGS dedicating commemorative Lewis & Clark Corps of Discovery II marker at Pompey's Pillar on 7/25/06... MARLS is promoting NSPS, with a goal of 100% membership in NSPS... MARLS has a new Corner Recordation Form that allows the surveyor to file a record of a new corner set without having to file a new Certificate of Survey or Amended Plat.

Nevada: Legislative items of interest: an item concerning NRS 327, specifically the language that seems to conclude that coordinates in NAD 83 may only be in meters; an item concerning Statute of Limitations specifically for the Land Surveyor in Nevada... 2007 Conference for NALS tentatively set for March.

New Mexico: New President David E Cooper, PS has taken over early due to the resignation of H. Daggett, new VP will be determined at next meeting... 2007 NMPS Conference in planning stages, will be in Albuquerque or Ruidoso... Minimum Standards for Surveyors goes into effect 7/1/06. Professional development hours are still 30 per biennium, now 4 hours are required to be obtained in 'ethics'... NMSU is scheduled to merge the Surveying Engineering Program into the Engineering Technology Program effective 7/1/06.

Oregon: Their 2006 annual conference, in conjunction with LSAW was a success, preliminary indications are that proceeds were nearly 45% higher than in 2005, official attendance was 965... PLSO Oregon Surveyor of the Year is Gary Johnston... PLSO membership is 770... new education

Continued page 23

Fajada Butte

By Diana E. Askew, PLS

The Stone Tower of Observation

Fajada Butte (Butte) is located in an area called Chaco Canyon in northern New Mexico. Chaco Canyon is known for the Pueblo Bonito archeological site, a possible ritual site for the Anasazi Indian (Anasazi) culture. The site was constructed between 900 and 1130 AD (<http://www.solsticeproject.org/cele-seas.htm>), and it appears to have been abandoned for unknown reasons. Several generations of Anasazi helped to construct Pueblo Bonito and other related structures.

The Anasazi seemed to be fascinated with astronomy, likely for agricultural purposes, but there seems to be more to this fascination than growing crops. For example, within the Pueblo Bonito a majority of the exterior walls are constructed due north and south or due east and west. There are many artifacts, mostly broken pottery, and literally hundreds of petroglyphs, both carved and painted onto the rocks. One such petroglyph has been carved near the top of the eastern face of the Butte and appears to match the design of the Pueblo Bonito structure. The center is marked by an arrow, creating a bow and arrow shape. The arrow is oriented along the meridian of the path of the sun at the equinox.

Below this petroglyph are several other petroglyphs; however three sites stand out as sites to mark astronomical occurrences. Each of these three additional sites continues to track the movements of the sun and moon, rather accurately marking the seasons. There is one significant difference between these sites and similar ancient solar/lunar movement tracking sites found on earth to date; the movements of the sun are measured at mid-day, rather than at sun rise or sun set.

The top of the Butte is approximately 400 feet above the Chaco Canyon floor (Sofaer, 1994).

Access is gained through a chimney sort of structure, where foot and handholds were carved for access to the upper tier of the butte. In the early 1980's there was an expanded steel gate installed to protect the area from vandals and to allow for further study of the archeological markings and structures on the Butte. I personally visited the site in the mid 1980's as part of a volunteer research team from Boulder, Colorado, in cooperation with the Solstice Project. Over a period of two weeks we documented and photographed the movements of the sun and moon in relation to the sites, but we specifically focused on the Sun Dagger site. North was determined for the land survey portion of our research by the location of Polaris in the northern sky at

midnight. With cooperation from the Parks Service we were able to remain on the Butte for several days at a time and developed our film in a closet within the lodging, in the dark.

By use of close range photogrammetry (using photographs taken with a hand held camera), our research was to be used to create a 3-D model the Sun Dagger site on the south face of the Butte, which failed at the time, however, the experience was fascinating. It



Diana E. Askew,
PLS

Continued page 24

WFPS REPORT continued

brochure now available for use by PLSO members.... PLSO Legislative Committee will focus on issues relating to property line adjustments for the 2007 session.

Utah: UCLS finished updating Articles of Incorporation to bring them in line with State Statute and IRS laws, will now be re-writing bylaws and constitution to reflect the new Articles, enabling UCLS to move forward in a legal manner... New laws concerning County Surveyors and Utah annexation were passed last session, this session the committee will be working on uniform platting act... Point of concern regarding a Survey Policy Waiver that basically states a boundary survey is not required for a lot split. This waiver will allow title companies to create paper surveys and deeds illegally and thus allow land parcel transactions to be performed without proper verification.

Washington: LSAW is continuing to work on their redefinition issue... hot topic with the Board of

Registration seems to be the minimum amount of research required for a boundary survey... membership currently stands at 1080.

Wyoming: Results of the Educational Questionnaire sent out by PLSW asking "are you in favor of an educational requirement for registration as a Professional Land Surveyor in Wyoming?" have been tabulated, 77% in favor of the present requirements, 23% not in favor.

Other items of interest:

WFPS has set the place of our 2007 Biennial Conference in San Diego, CA. during March or April, 2007, in association with CLSA. Scholarship recommendations for 2006-2007 Academic Year: Branden Lee Langley, Senior at New Mexico State - \$3000.00 James Earl Jacobs, Senior at Metro State - \$2500.00 Jennifer June Heller, Senior at OIT, Klamath Falls - \$1500.00

End of Report

FAJADA BUTTE *continued*

appears from the Solstice Project Web site that a new attempt is being made to map the Sun Dagger site with a laser scanner rather than conventional theodolite measurements, stick on targets, and a 35mm Camera, which we used in our attempt to create a control network in which to orient the overlapping photos with (<http://www.solsticeproject.org/fajada.html>).

The Pueblo Bonito Petroglyph

The structure design of Pueblo Bonito is a semicircle with a bounding wall along the south end as a diameter of the circle. The largest of the Kivas within the structure is located at the intersection of the bounding wall and the main central support of the overall structure. The central support (north – south) lies on the path of the sun’s passage at noon, along the azimuth. The bounding wall on the south is aligned east-west along the path of


the sun at equinox. The intersection of these two walls is the intersection of the sun’s yearly passage and the sun’s daily passage. The entire structure was four stories high when it was completed; however, it required several years to complete the overall structure (Sofaer, 1994).

A petroglyph is carved into the cliff face near the top of the Butte which closely resembles the structure layout of Pueblo Bonito on the ground. The petroglyph is located on the highest cliff on the Butte, at the approximate center, about 30 feet west of the Sun Dagger site. This is the only carving which has this type of shape on the entire Butte (Sofaer, 1994). A radial line in the shape of an arrow bisects the semicircle, and a drilled hole is located in about the same location as the largest Kiva, mentioned above. The Kiva location is represented in the same position as what was constructed in the building, but the shape of the curved exterior wall is a mirror of the actual structure, as the east and west portions of the arc are exchanged. The top line of the carving corresponds with the south line of the structure, and the main central support corresponds with the line of the arrow. The carving faces east to greet the morning sun at the equinox, and the arrow points along the meridian of the path of the sun and to the center of a spiral which originates along the radial line (see figure 1 and figure 2 at <http://www.solsticeproject.org/celeseas.htm>).

Three More Significant Fajada Butte Sites


There are three sites on the Butte which mark the movements of the Sun, with one site that marks the 19 year cycle of the moon as well (<http://www.solsticeproject.org/astro-mark.htm>). The west petroglyph site is a carved horizontal opposing spiral shape near the top right of a smooth rock face, with a carved rectangular shaped petroglyph further down and to the right of the spiral. The Sun Dagger site is comprised of

Continued page 25



United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Colorado State Office
2850 Youngfield Street
Lakewood, Colorado 80215-7093



www.co.blm.gov

IN REPLY REFER TO:

CO-956
9655.2

June 30, 2006

Mr. Arthur W. Hipp, Secretary-Treasurer
Professional Land Surveyors of Colorado
9660 West 56th Place
Arvada, Colorado 80002

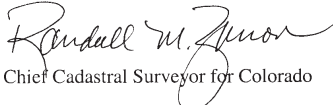
Dear Art:

This letter is to inform you of official cadastral surveys in Colorado that have been accepted from April 1, 2006, through June 30, 2006, and are now available from the Public Room, Bureau of Land Management, Colorado State Office, 2850 Youngfield Street, Lakewood, Colorado, 80215.

The accepted original surveys, resurveys, supplemental plats or remonumentations are listed below by township, range, meridian, group #, type, approval date and number of plats.

<u>Township</u>	<u>Range</u>	<u>Meridian</u>	<u>Group #</u>	<u>Type</u>	<u>Approved</u>	<u>Plats</u>
T. 45 N.	R. 6 W.	NMPM	MS 20931	Plat & Notes	04/05/06	1
T. 1 N.	R. 71 W.	Sixth	Secs.7&8	Suppl. Plat	04/12/06	1
T. 3 S.	R. 73 W.	Sixth	Sec.1	Suppl. Plat	04/17/06	1
T. 1 N.	R. 71 W.	Sixth	Sec.22	Suppl. Plat	05/05/06	1
T. 12 S.	R. 71 W.	Sixth	1417	Plat & Notes	05/18/06	1
T. 33 N.	R. 7 W.	NMPM	1456	Plat & Notes	06/13/06	1
T. 1 N.	R. 72 W.	Sixth	1434	Plat & Notes	06/19/06	2
T. 1 S.	R. 72 W.	Sixth	1434	Plat Only	06/19/06	1
T. 11 S.	R. 69 W.	Sixth	1406	Plat & Notes	06/26/06	1
T. 8 N.	R. 95 W.	Sixth	1441	Plat & Notes	06/26/06	1

As other surveys are completed, I will advise you of their acceptance. You may circulate this letter among the membership of the Professional Land Surveyors of Colorado.

Sincerely yours,

Chief Cadastral Surveyor for Colorado

FAJADA BUTTE *continued*

3 six to nine-foot tall rock slabs, nearly vertical to the cliff face, and behind these are a large spiral and a smaller spiral just up and to the left of the larger spiral (looking north). The east petroglyph site is a carved snake, another carved spiral, and another carved rectangular shape. None of the sites are inter-visible, and considering some of them mark identical solar occurrences, three or more people would be necessary to record the movements at all three sites simultaneously (Sofaer, Sinclair, 1983).

The West Site

The West site casts a shadow which moves across the rectangular petroglyph, which marks the midday location of the sun every day throughout the year, within a few minutes. This same patch of sun elongates into a dagger shape and moves across and through the rightmost spiral at the fall equinox. At the spring equinox the same dagger shape moves through the leftmost

spiral (see figures 4.7 through 4.9 at <http://www.solsticeproject.org/astro-mark.htm>).

What makes this site fascinating is that it is not easy to gain access to, and the light of the mid day sun surely had to have been tracked for several years in order to figure out where to make the appropriate carvings in the cliff wall. This site is somewhat simplistic as compared to the other two sites, as it only involves markings on two petroglyphs to mark significant events like the solstice and equinox.

The East Site

The spiral and snake are marked by light at the same time at the spring and fall equinox, and the spiral and the rectangle are marked by light at the winter and summer solstice. All of these markings are made in the petroglyph carvings close to noon. The relation of the carvings to each other is fortuitous, and the rectangle and snake may not be related to the markings on the spiral at all. The spiral is

marked both at the solstice and the equinox (see figures 4.5 and 4.6 at <http://www.solsticeproject.org/astro-mark.htm>).

The spiral has significant differences in the light and shadow depending on the season. At the equinox the light creates a quadrant shape in the spiral, at Winter Solstice the lower half of the spiral is illuminated, and at the Summer Solstice the spiral is completely in shadow. At the equinox, the sun appears to align with the body, head and tail of the snake below. Again, it would have been necessary for a person to observe the light move across the face of the cliff at noon for some time to carve these petroglyphs in the proper position.

The Sun Dagger

The Sun Dagger site is a work of advanced engineering and study of the science of astronomy. The stones used to create the rock faces at the site are made of sand-

Continued page 34



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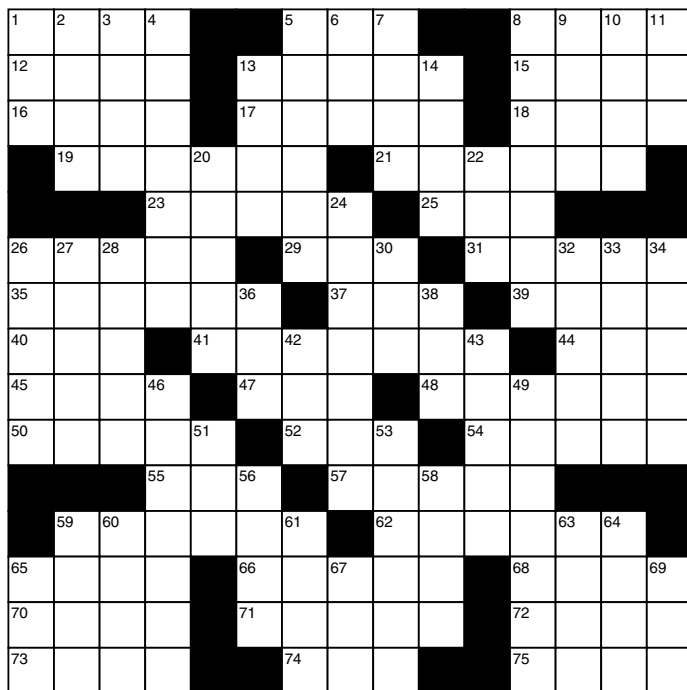
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ACROSS

- 1 **The National Survey and Mapping association**
- 5 **a Private land claim (abbr.)**
- 8 Entrap
- 12 evidence?
- 13 Upper body clothing
- 15 Roar
- 16 **In Texas, 33-1/3 inches**
- 17 Smelled
- 18 Put on ___
- 19 **note-taker?**
- 21 Fleecy
- 23 Number
- 25 Animal foot
- 26 Harbor
- 29 **a drafting method on the computer?**
- 31 West Coast Fl. city
- 35 Fairy King
- 37 Roman twelve
- 39 Irritate
- 40 Hotel
- 41 Lucent
- 44 Haze
- 45 Oceans
- 47 Medical practitioner
- 48 Per ___
- 50 Mary ___ Moore

- 52 **abbr. for a tract**
- 54 Indifferent
- 55 Cause of sickness
- 57 Marsh
- 59 Become bigger
- 62 **a straight line perpendicular to a surface or another line**
- 65 Adze
- 66 Bedded vehicle
- 68 Tell
- 70 Payment
- 71 Strange
- 72 Native ruler in Asia
- 73 Aces
- 74 Abort
- 75 Pater

DOWN

- 1 Air Cushion Vehicle (abbr.)
- 2 **"___ a 90" (approximate angle)**
- 3 Safe
- 4 **offset following a stream or body of water**
- 5 Producing sound
- 6 **a geographic system for keeping data (abbr.)**
- 7 **a survey "party"**
- 8 **the line or thread connecting**

the lowest points of a stream or river.

- 9 Churn
- 10 Askew
- 11 **a license to achieve after acquiring an LSI Certificate**
- 13 Hang-up
- 14 **abbr: dilution of precision based on time**
- 20 **with "axis" the shortest axis of an ellipsoid.**
- 22 Cereal
- 24 Yellow(?) toll car
- 26 Elevate
- 27 **with "level" an instrument suitable for direct leveling as well as angles and percent of slope**
- 28 Corrupt
- 30 **twice a Rad. of a circle**
- 32 Organized crime
- 33 **drafts a survey onto paper**
- 34 Fish tank growth
- 36 **abbreviated - a datum made to fit the United States**
- 38 Business title ending
- 42 **a geometrical effect on GPS accuracy**
- 43 Small drum
- 46 **_____ Spiral: a railroad surveyor's type of spiral approximation**
- 49 **not vertically challenged?**
- 51 River (Spanish)
- 53 Stale
- 56 Pear shaped instrument
- 58 Link
- 59 Fly
- 60 **___ stick, slang for a prism pole**
- 61 **a natural monument**
- 63 ___ mater
- 64 Put down
- 65 **abbr. 36 Sections or an east-west line**
- 67 Vase
- 69 Lingerie

Solution on page 30

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Surveying and GIS - “Get It Surveyed” or “Getting Information Shared”?

By: Daniel A. Smith, PLS

Ask a professional land surveyor or what the acronym for Geographic Information System (GIS) means to them and their likely response will be: “Get It Surveyed!” This opinion is not surprising considering surveyors’ standard of practice requires a higher degree of horizontal and vertical accuracy than GIS data typically does. This begs the question: Is this a fair opinion to have? Is there more to surveying than data accuracies? Is there more to GIS than data accuracies?

Perhaps it’s time to look beyond the issue of accuracy and to redefine this traditional opinion to one that embraces both surveying and GIS: “Getting Information Shared.”

Over the past decade there have been numerous discussions on the roles and responsibilities of these respective disciplines recognizing the need to bring surveyors and GIS professionals together. In fact, an increasing number of surveyors and GIS professionals are reaching out to each other in order to gain a better understanding of their similarities and differences, to work together and to benefit from one another by sharing goals, ideas, expectations and data. While exploring these somewhat independent disciplines in today’s increasingly dependent world; accurate, fast and reliable data gathered and disseminated in real time is not only desired, it’s a necessity. Colorado’s surveyors and GIS professionals are fortunate to have local conferences such as GIS in the Rockies that provide opportunities for surveyors and GIS professionals alike to network and share ideas with one another. Within the United States the practice of land surveying is typically a licensed and regulated profession defined by state law. Each state should be contacted for exact legal definitions. In 2003, the National Council of Examiners for Engineers and Land Surveyors (NCEES)¹ approved revisions to its Model Law

for land surveyors (a document from which most state survey licensing laws are derived from) clarifying surveyors’ roles and responsibilities based upon the recommendations made by a task force comprised of representatives from the following surveying and GIS professional associations:

- American Congress on Surveying and Mapping (ACSM)
- American Society of Civil Engineers - Geomatics Division (ASCE)
- American Society for Photogrammetry and Remote Sensing (ASPRS)
- Management Association for Private Photogrammetric Surveyors (MAPPS)
- National Society of Professional Surveyors (NSPS)
- National States Geographic Information Council (NSGIC)
- Urban and Regional Information System Association (URISA)

The NCEES Model Law (revised August 2005) Section 110.20, B. 4., defines the “Practice of Surveying” to mean providing, or offering to provide, professional services using such sciences as mathematics, geodesy, and photogrammetry, and involving both (1) the making of geometric measurements and gathering related information pertaining to the physical or legal features of the earth, improvements on the earth, the space above, on, or below the earth and (2) providing, utilizing, or developing the same into survey products such as graphics, data, maps, plans, reports, descriptions, or projects. Professional services include acts of consultation, investigation, testimony evaluation, expert technical testimony, planning, mapping, assembling, and interpreting gathered measurements and information related to any one or more of the following:

- a) Determining by measurement the configuration or contour of the earth’s surface or the position of fixed objects thereon.
- b) Determining by performing geodetic surveys the size and shape of the earth or the position of any point on the earth.
- c) Locating, relocating, establishing, reestablishing, or retracing property lines or boundaries of any tract of land, road, right of way, or easement.
- d) Making any survey for the division, subdivision, or consolidation of any tract(s) of land.
- e) Locating or laying out alignments, positions, or elevations for the construction of fixed works.
- f) Determining, by the use of principles of surveying, the position for any survey monument (boundary or non-boundary) or reference point; establishing or replacing any such monument or reference point.
- g) Creating, preparing, or modifying electronic or computerized or other data, relative to the performance of the activities in the above described items a. through f.

Unlike surveying, state law does not typically define what are the roles and responsibilities of a GIS professional. Although there are some exceptions, for the most part professional societies, textbooks and government agencies need to be researched in order to gain an understanding of what a generally accepted definition is. If we break down the words in the phrase Geographic Information System we get the following:

- Geo: Of the Earth.
- Graphic: Pictorial or drawing.
- Geographic: Of or relating to a particular region of the Earth.
- Information: Knowledge obtained from investigation, study, or

Continued page 30

SURVEYING AND GIS continued

instruction.

- System: A regularly interacting or interdependent group of items forming a unified whole.

Although the definitions of a GIS one might find in use throughout the United States are rather consistent, they do vary depending on the entity and its purpose, a few examples are:

- United States Geological Society (USGS)²: A computer system capable of capturing, storing, analyzing, and displaying geographically referenced information; that is, data identified according to location. Practitioners also define a GIS as including the procedures, operating personnel, and spatial data that go into the system.
- National Geodetic Survey (NGS)³: A system of computer hardware,

software, and data that allows the manipulation, analysis, and display of spatial data.

- Environmental Systems Research Institute, Inc. (ESRI)⁴: A collection of computer hardware, software, and geographic data for capturing, managing, analyzing, and displaying all forms of geographically referenced information.

Perhaps one of the most common but least known elements between surveying and GIS is the National Spatial Reference System (NSRS). Defined and managed by NGS, the NSRS is a consistent coordinate system that defines latitude, longitude, height, scale, gravity, and orientation throughout the United States. The NSRS comprises a consistent, accurate, and up-to-date national shoreline; a network of Continuously Operating Reference Stations (CORS) which supports 3 - dimensional positioning activities; a network of permanently marked points; and a set of

accurate models describing dynamic geophysical processes that affect spatial measurements and provides the framework for accurate GIS nationwide.

Whether it's a large scale GIS for a government agency or a small scale GIS for managing a local surveying firm, GIS is a marvelous tool which can be used for many applications and processes. When survey data is incorporated with it the result is a more accurate and reliable GIS.

The 19th annual GIS in the Rockies conference will be held at INVESCO Field at Mile High, September 13-15, 2006. For more information please visit: www.GISintheROCKIES.org.

¹www.ncees.org/introduction/about_ncees

²http://erg.usgs.gov/isb/pubs/gis_poster/

³<http://www.ngs.noaa.gov/>

⁴<http://www.gis.com/index.html>

PLSC, Inc. is seeking people to help update the Statute Book originally prepared by Bob Stollard. The book needs to be updated to include post-sunset legislation items and any other additions and/or updates that have occurred since the book was prepared. If you are memorizing statutes for the exam, this would be a way to benefit from all that studying. If interested, please contact Tom Adams at tom@plsc.net

Solution:

A	C	S	M			P	L	C			T	R	A	P						
C	L	U	E			S	H	I	R	T		H	O	W	L					
V	A	R	A			N	O	S	E	D		A	I	R	S					
		P	E	N	M	A	N			W	O	O	L	L	Y					
						D	I	G	I	T		P	A	W						
H	A	V	E	N			C	A	D			T	A	M	P	A				
O	B	E	R	O	N			X	I	I			G	A	L	L				
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P	R	O	S								E	N	D				D	A	D	A

Do you have a puzzle, survey problem, cartoon, or other entertaining item you would like to see in SideShots? Please submit to Tom Adams at "Tom@plsc.net", (719) 296-8262.

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Fundamentals of Surveying - Principals of Practice - Colorado Specific

January 10 to March 17, 2007

The Central Colorado Professional Surveyors and the Metropolitan State College of Denver Surveying and Mapping Program in cooperation with the Colorado School of Mines, and in support of the Colorado Surveyors Educational Foundation, Inc., are offering a comprehensive Land Surveying Refresher Course for 2007. This course offers a review and self-study plan for those taking the NCEES/Colorado exam(s). The course is specifically designed to aid candidates in **developing and expanding exam-taking proficiencies**. The main thrust of the course is in establishing a realistic study schedule. It is emphasized that time spent in the course will be concentrated on sharpening existing skills, identifying areas of weakness and instilling self confidence. Practical methods to solving problems will be stressed.

Refresher Course Schedule

Date	Topic	Instructors
1 Wed Jan 10	Overview NCEES/COLO	Herb Stoughton/Alan Blair
2 Wed Jan 17	Land Surveying Calculations I	Gaby Neunzert
3 Wed Jan 24	Land Surveying Calculations II	Gaby Neunzert
4 Wed Jan 31	Legal Terminology and Definitions	Diana Askew
5 Wed Feb 7	U.S. Public Land Surveys I	Randy Zanon
6 Wed Feb 14	U.S. Public Land Surveys II	Randy Bloom
7 Wed Feb 21	Colorado Statute Law I	Doyle Abrahamson
8 Wed Feb 28	Colorado Statute Law II	Roger Nelson
9 Wed Mar 7	Colorado Statute Law III	Doyle Abrahamson
10 Sat Mar 17	Mock Examinations	Randy Zanon/Randy Bloom

Times

The Wednesday evening classes will be 3 hours in length, starting promptly at 6:00 P.M. The Saturday March 17 session will concentrate on a review of problems and questions typical to NCEES/Colorado examinations. It will begin at 9:00 A.M., and end at Noon.

Registration and Costs

The fee for the entire course is \$250, or \$40 per 3-hour block taken individually. Complete and mail the Registration Form to the address provided. Early registration is recommended so that adequate handout materials can be assured. **Optional: Course content offered on compact disc with lecture notes, \$130, available in class.**

Materials

It is suggested you bring a NCEES approved calculator (see list below) that you are very familiar with, any surveying textbooks available to you, a Manual of Surveying Instructions, 1973, Black's Law dictionary, a 3-ring binder for notes and handout materials and an inquiring mind. Homework and quizzes are to be expected.

NCEES Approved Calculators: Hewlett Packard (HP) 33s, HP 9s, Casio - FX 115 MS and FX 115 MS Plus (Note: Models with "-SR" designation at end are also allowed.) Texas Instruments (TI) - TI 30X IIS, TI 30X IIB, TI 36X)

Location and Further Information

The Colorado Refresher Course will be given in Room 204 of the George R. Brown Hall located on the campus of the Colorado School of Mines in Golden, Colorado. See <http://www.colorado-surveyors.org/> for further information or contact Randy Bloom at 303-239-3827.

Registration form on page 33

Metropolitan State College of Denver – Surveying and Mapping Program

Registration Form for Colorado Refresher Courses

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| <input type="checkbox"/> Land Surveying Calculations II | \$40 | <input type="checkbox"/> Colorado Statute Law III | \$40 |
| <input type="checkbox"/> Legal Terminology and Definitions | \$40 | <input type="checkbox"/> Mock Examinations | \$40 |
| <input type="checkbox"/> U.S. Public Land Surveys I | \$40 | <input type="checkbox"/> 10 DVD disc set and lecture notes | \$130 |
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Greenwood Village, CO 80111

FAJADA BUTTE *continued*

stone, and are very large, two are about six feet tall, about three feet deep and six to eight inches thick, and the furthest east is nine feet tall, about three feet wide and six to eight inches deep (this is all from memory and it has been 20 years since I was there). The stones all came from a single stone, meaning they would all fit together if they had not been chipped at and eroded over time. It does not appear that the stones fell as is from the cliff face, but this is a theory based on their position in relation to the area. The stones cast a shadow on the cliff behind them most of the day, and in the summer heat of New Mexico it is a great place to get out of the sun. Behind the stones the larger of the two spirals has 19 rings, and up and to the left of the larger spiral, the smaller spiral has eight rings and a tail that hooks to the east (a single ring is the inside of the carving; another is the space between the carved surfaces).

On the summer solstice a dagger of light between the two most easterly stones goes through the middle of the larger spiral, around noon. There is no light on the smaller spiral at all. I was actually

sitting there taking pictures during this event during my stay in Chaco Canyon. At winter solstice the spiral is bounded by two daggers of light, again around noon, from both of the two gaps between the three stones. At fall and spring equinox the dagger of light appears between the two most westerly stones in the center of the smaller spiral, and another dagger appears in the larger spiral, but not at the center of the spiral.

Along with marking the change of the seasons, the Sun Dagger also measures the 19 year path of the rising sun and moon on the horizon to the south. The stones cast a shadow in this case, rather than allowing light between the stones (see figures 4.1 through 4.3 at <http://www.solsticeproject.org/astromark.htm> and figure 7 at <http://www.solsticeproject.org/science.htm>).

Conclusion

All of these carvings which display light and shadow during the equinox and solstice each year display conclusive evidence that the

Anasazi culture was both fascinated by the paths of the sun and moon, notably the sun at midday. The evidence is rich at the Chaco Canyon site, with many additional instances of astronomical study over many years of observing the patterns of the sun and moon.

Because Pueblo Bonito was a ceremonial site, and was built over a period of many years, the careful observations of many generations were documented to provide substantial information which was used to engineer the Sun Dagger site, as well as many of the other solstice and equinox petroglyphs found on Fajada Butte. It is possible that the Pueblo Bonito Petroglyph was a blueprint for the structure of Pueblo Bonito, or that the Structure of Pueblo Bonito is represented as the carving, to signify that the structure ever existed.

References

Sofaer, A. (1994). Pueblo Bonito Petroglyph on Fajada Butte: Solar Aspects. [Online], Available: <http://www.solsticeproject.org/cele-seas.htm> (2006, June 26).

Sofaer, A., & Sinclair, R. M. (1983). Astronomical Markings at Three Sites on Fajada Butte. [Online], Available: <http://www.solsticeproject.org/astromark.htm> (2006, June 26).

Sofaer, A., & Sinclair, R. M., & Zinser, V. (1979). A unique Solar Marking Construct. [Online], Available: <http://www.solsticeproject.org/science.htm> (2006, June 26).

Personal experience gained as a volunteer while employed at Vexcel Corporation in Boulder Colorado during the mid eighties.

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