

THE REFERENCE POINT (News from and of the California Spatial Reference Center)

} **Acronyms:** *PBO – Plate Boundary Observatory; CGPS – Continuous GPS; SCIGN – Southern California Integrated GPS Network; UCSD – University of California at San Diego; QBS – Qualification Base Selection.*

} **The Director's Report:**

I am pleased to contribute to this CSRC newsletter as the Center has made significant progress since the fall 2003 Coordinating Council meeting. In terms of personnel, we have reorganized our consulting staff to deal more effectively with CSRC/PBO interactions. I am pleased to announce that Don D'Onofrio and Jim Swanson will interact with PBO in northern California, with Don moving into the role of CSRC Consultant and contact for Northern California effective April 1. Jim will continue his efforts on PBO coordination and other activities. I am also pleased to announce that Bob Packard has agreed to work with our Southern California Consultant and Professional Land Surveyor (Cecilia Whitaker) on PBO support. Mike Potterfield continues to work closely with me on developing guidelines for height modernization projects and preparing a document entitled "Implementation and Use of the California Spatial Reference System." In January, a draft of this document was circulated to NGS for review and comment. We are getting close to hiring a replacement for our CSRC Coordinator, Susie Pike Humphrey, who has continued (patiently) to fill this role in the interim. (See also article below.)

We completed the first phase of establishing NAVD88 on CGPS stations in southern California. Cecilia Whitaker coordinated this effort. The contract with Johnson-Frank & Associates, Inc. was amended to include six-hour static GPS surveys on each of the 40 NAVD88 benchmarks used to establish NAVD88 orthometric heights on the 20 CGPS (SCIGN) stations. The GPS height modernization survey in California's San Joaquin Valley was advertised by UCSD on February 13. It is the third, and largest, height modernization project to be contracted to the private sector by CSRC and the first to use QBS evaluation procedures. (See articles below for more information on these projects.)

Currently, CSRC is negotiating with NGS on a new epoch date for publishing updated coordinates on all CGPS stations throughout California. CSRC posted epoch 2003.50 coordinates (and velocities) for these stations on the CSRC's website <http://csrc.ucsd.edu/input/csrmMail/msg00077.html> on October 3, 2003. In the meantime, the San Simeon earthquake occurred (magnitude 6.5) on December 22, 2003. NGS has proposed that CSRC consider a later epoch date, 2004.00, rather than the 2002.00 epoch previously published for the U.S. CGPS stations by NGS. CSRC is planning a resurvey of geodetic monuments in the San Simeon area in June.

Yehuda Bock, Director Please send comments to ybock@ucsd.edu.

} **Message from the Chairperson:**

With the passage of HR2673 (the House appropriation bill that includes NGS) by the Senate on January 22, one would expect that the Federal Budget process for FY03/04 should now be behind us. The news for CSRC contained in this spending bill was favorable with continued funding for the Center at \$1.0 million for this coming year, and no new direct restrictions attached to it. And the overall increases in National Height Modernization funding going to seven other states – Wisconsin topping the list with a record figure of \$3.0 million – indicates a greater understanding of the issues and needs for geodesy at our nation's capital. The actual appropriations work however, for the fiscal year now approaching its fifth month, is only partly done. Federal appropriations must be **funded**, and there are paper-intensive processes required to make this happen. And without meticulously monitoring of the processes, assessments and administrative fees can seriously reduce California's allocations. As the University's experts (thank you Yehuda and Susie) are finding the most efficient funding mechanisms for this year's allocation, the process starts once again to prepare for FY04/05.

In February, a delegation representing several spatial reference interests, including four from CSRC (with me), were joined by Jack Dangermond in a visit to the office of Congressman Jerry Lewis in Redlands. The visit provided a rare opportunity to discuss spatial referencing issues directly with a Congressman. I found the meeting to be extremely informative and productive. For details, see the article, below, entitled "Meeting Held with Congressman Lewis."

A representative group of CSRC Executive Board members is planning to participate in meetings in Silver Spring, MD and Washington, DC in the next few months. CSRC has learned that final resolution of technical issues is achieved faster when meeting face-to-face with NGS. In addition, the federal budget process, as noted above, is never-ending.

Greg Helmer, Chairperson Please send comments to gahelmer@rbf.com.

} Notice – Spring Coordinating Council Meeting Scheduled:

The fall CSRC Coordinating Council meeting is scheduled for Friday, May 14, 2004, in northern California. ***Please reserve this date on your calendar.*** Additional information (location, preliminary agenda, etc.) will be provided in future e-mails, as it becomes available.

In addition, to the usual agenda items regarding CSRC operations, funding, on-going projects, and outreach efforts, elections will be conducted at this meeting for the following CSRC positions:

- Secretary (*the secretary is also a member of Executive Council*)
- Treasurer (*the secretary is also a member of Executive Council*)
- Two members of the Executive Council

If you are a member of CSRC Coordinating Council and wish to be a candidate for any of these four positions, contact Chairperson Greg Helmer at gahelmer@rbf.com as soon as feasible. The term of each elected position is for two years, and a person cannot serve more than two consecutive full two-year terms. Incumbents in the listed positions are completing their first term.

If you have any suggestions for agenda items for the spring Council meeting, contact Helmer at the e-mail address above. It is your meeting, so please do not hesitate to suggest items for discussion.

} Meeting Held with Congressman Lewis:

In February Bill Young, Cecilia Whitaker, Dan Moye, John McRaney, Mark Turner, and Greg Helmer were joined by Jack Dangermond, in a visit to the office of Congressman Jerry Lewis in Redlands. Congressman Lewis is a senior member of the House Appropriations Committee, and Chairman of the Defense Appropriations Sub-Committee. His long friendship with Jack Dangermond and ESRI has provided the Congressman with a good understanding of the GIS world, and with it, the value of geodesy. Congressman Lewis provided us with more than an hour of his time. He listened and asked questions that showed understanding and interest in the mission of CSRC.



L to R: Dan Moye - County of San Bernardino, John McRaney - Southern California Earthquake Center, Cecilia Whitaker -Metropolitan Water District of Southern California, Jerry Lewis - U.S. Congressman, 41st District, Greg Helmer - RBF Consulting and Chairman CSRC, Mark Turner - Caltrans Sacramento, Bill Young - Past Chairman CSRC, Jack Dangermond - President ESRI

Following this meeting, the CSRC representatives were treated to a personal tour of the ESRI campus by the company's renowned founder and principal. Mr. Dangermond demonstrated impressive global visualizations using their latest GIS software and showed several real-world projects completed "on-the-fly" for

the recent Southern California fires. Geodetic science is important and noteworthy, but finds its true value when seen in the context of such humbling personal tragedy and loss.

} CSRC Announces Height Modernization Contract for San Joaquin Valley:

CSRC issued a "Request for Proposal" (RFP) on February 13, 2004, for a GPS height modernization survey in San Joaquin Valley. *Note: The survey will improve horizontal positions, as well as, heights.* The completed RFPs are due from potential contractors on March 15, 2004, and it is expected that a contract will be awarded in April 2004 to a successful firm.

The contracting process and contract are being administered by the University of California at San Diego. At the request of the private surveying community and NGS, the RFPs will be evaluated based on QBS procedures. For additional information regarding this contract, refer to the University's website at <http://www-bfs.ucsd.edu/pur/services/rfirfq/rfirfqpg.htm>. The project is listed as "RFP # 0404RJB."

The San Joaquin height modernization survey will be conducted along the California Aqueduct and the following highway corridors: Interstate 5 and State Highways 99, 152 and 198. The entire survey will consist of about 105 stations, including the control stations. Some control stations are continuously operated GPS sites in and surrounding the project area. The total project encompasses a large, narrow triangular area having the approximate limits of Highway 152 on the north, Highway 99 on the east, Interstate 5 on the west, and the junction of Interstate 5 and Highway 99 on the south.

CSRC is working closely with Caltrans who is conducting GPS surveys for sections of the project and leveling efforts for the overall project. Specifically, Caltrans is performing leveling operations along two east-west highway corridors: Highways 152 and 198. In addition, Caltrans is performing two smaller height modernization surveys within the project area (in the Visalia and Los Banos areas). The results of all of these surveys will be incorporated into an overall adjustment performed by CSRC and then forwarded to the NGS for approval and publication.

This is the second height modernization contract sponsored by the CSRC. The first was for the South San Francisco Bay area.

} Initial Contract to Establish NAVD88 on CGPS Stations Nears Completion:

The CSRC leveling contract for establishing NAVD88 elevations on 20 CGPS stations is nearly completed. The only work remaining, as this newsletter is being prepared, is some added GPS work that was not included in the original contract and minor documentation efforts. This is CSRC's first contract for this kind of work. The overall objective of this effort, which is being performed in cooperation with NGS, is to improve heights in California (i.e., height modernization) by providing (a) CGPS orthometric heights (and related data) to aid GPS-derived survey methods and (b) additional data to improve California's geoid model.

Johnson-Frank & Associates, Inc., located in Anaheim California, was selected by CSRC to perform the work. The Contractor's efforts are being managed by Roger Frank and Cecilia Whitaker is CSRC's Project Manager. Johnson-Frank has successfully completed the leveling work for all CGPS stations. The contract required the leveling to meet Second Order, Class II standards and specifications using an electronic digital/bar code leveling system. The leveling data for the 20 CGPS stations is now ready for submittal to NGS for final analysis, adjustment, and publication.

Currently, the Contractor and Whitaker are in the process of documenting the methods and findings for this height modernization, leveling project. These methods and findings will be published as part of CSRC's document entitled, "Implementation and Use of the California Spatial Reference System," which is currently being developed. In addition, Johnson-Frank is in the process of completing the added GPS work. This work requires the Contractor to occupy all benchmarks that were used in the original leveling contract and perform long GPS observation sessions on each. The added GPS data and information will assist the refinement of the orthometric height analysis and adjustment.

Information gained by the completion of this project and other CSRC leveling projects will be used by CSRC to revise the current CSRC "Specifications and Procedures for performing Geodetic Leveling and Related Work to Establish Elevations on CORS". When completed and approved by NGS, the revised document will be made available to all users through the CSRC website.

} RTK CGPS Network Expansion:

There are now 35 SCIGN sites collecting high-rate (once per second) data (see UCSD's website <http://sopac.ucsd.edu/maps/> and click on SCIGN). Of these, users have real-time access (one- to two-second latency) to about half of the sites, including the Orange County Real Time Network (OCRTN). Although, CSRC funding for real-time networks ended with the OCRTN, Scripps through NASA funding and UCSD's HPWREN and ROADNet projects, is in the process of upgrading 30 more SCIGN sites as part of the Riverside County Real Time Network (RCRTN).

Current plans are that eight stations will be streamed through UCSD's HPWREN infrastructure (two sites are already on line), 11 stations through Metropolitan Water District's (MWD) infrastructure, and 11 stations through the Riverside DOT communications backbone. Negotiations with Riverside DOT are not completed, but the UCSD and MWD efforts are moving forward.

In addition, there are efforts to establish partnerships in San Diego, Los Angeles, and Imperial Counties, to upgrade the SCIGN sites in those counties to real-time capability. Progress in northern California (i.e., BARTN) is slow. Michael Rubner (Los Angeles City) organized a meeting in San Pedro on February 17 to discuss real-time networks in Los Angeles County. Yehuda Bock, CSRC Director, made a presentation at the meeting and proposed to incorporate several stations surrounding the Harbor of Los Angeles into the OCRTN, in consultation with Art Andrew. Within a year, it is expected that about 75 to 80 SCIGN sites will be providing real-time data. CSRC is also encouraging PBO to consider providing real-time access to its data for RTK support throughout the state.

} CSRC Representatives Meet with Scripps Director:

At the conclusion of the Coordinating Council meeting in October, several members of the Executive Committee thought it was time to consider the long-term existence of the Center. The publication of the Master Plan, the successful completion of several projects, and recently, the funding of the Plate Boundary Observatory indicated to many of the early supporters and founders that the envisioned purpose of the Center is being realized. It was time to determine if the Scripps Institution of Oceanography (SIO) was willing to make the long-term commitments necessary to facilitate the Center's continuing and maturing growth.

On January 22, 2004, Bill Young, Dave Stone, and Dick Davis met with Dr. Charles Kennel, Director of SIO, to discuss these concerns. Fortunately, Dr. Kennel was very easy to talk with. He is quite satisfied with the relationship between SIO and the Center. Furthermore, he anticipates and looks forward to a long-term association with CSRC. A recently completed university-wide assessment recommended that SIO develop additional endeavors with other groups similar to the one with the Center. Dr. Kennel offered to assist CSRC with any problems that may arise and with our fund-raising efforts if his input could be effective.

} Fall Coordinating Council Meeting Conducted:

On October 17, 2003, the CSRC Coordinating Council met in La Jolla for their fall meeting (yearly, the Council holds two meetings). About 35 persons attended, including Gilbert Mitchell and Renee Shields from NGS (in addition, to California's NGS State Geodetic Advisor, Marti Ikehara). Mitchell is the chief of the Geodetic Services Division and Shields is responsible for liaison between NGS and CSRC. Greg Helmer, chairperson of CSRC, conducted the all-day meeting and Susie Pike Humphrey, CSRC Coordinator, was responsible for all arrangements.

The meeting minutes are posted on CSRC's website <http://csrc.ucsd.edu/general/reports.html>. The key agenda actions included:

- A consensus was reached on a "Code of Ethical Conduct" and other policy statements. See article below.
- Dr. Bock provided a detailed Director's report, including discussions of current and future (potential) funding.
- The FY04/05 Work Plan Committee discussed their progress to date and advised the Council that a draft 04/05 Plan will be completed by first of the year. (*P.S. This was accomplished; see article below.*) Dick Davis presented a proposal for a large height modernization project in northern California.
- Briefings were provided on various on-going CSRC projects. See articles above.
- The status of various CGPS issues was discussed, including the recent readjustment of California's CGPS stations, San Francisco RTK network, and coordination with PBO.
- A number of planned public outreach efforts were reviewed, such as a RTK network symposium, NGS "face-to-face" meetings, and the April 2004, CLSA/NALS conference.

The next Coordinating Council meeting is set for May 14, 2004 in northern California (notice is above).

} New Coordinating Council Members:

During this past year, CSRC has added several new members to the CSRC Coordinating Council. The new members and their affiliation are as follows:

- Michael Emmons – County Surveyor, Santa Barbara County.
- Ralph D. Hamrick – Chief Survey Section, U.S. Corps of Engineers.
- Kevin Kelly – Geodesist and Senior Project Manager, The Keith Companies, Inc.
- Thomas J. Nagle – Program Manager, Civil Applications,
NAVSTAR, Global Positioning System GPS Joint Program Office.
- Steve Sarsfield – Surveyor, Department of Transportation and Public Works, Sonoma County.

These new members are the result of the continuous, diligent effort of CSRC's membership chairperson, Bill Young. Thank you Bill. If you have any additional suggestions for potential candidates for the Council, please contact Young at whyoung@concentric.net.

An up-to-date e-mail listing (an Excel file that lists addresses for all Council members and other contacts) and a roster (a Word file that shows what subgroups and positions are filled) will be e-mailed to you in a separate mailing. Currently 49 Council positions are filled out of a total 65 positions. Thus, CSRC continues to seek new Council candidates who share CSRC interest and goals.

} CSRC Adopts Code of Ethical Conduct:

At their fall 2003 meeting, the CSRC Coordinating Council discussed and reached a consensus on a draft CSRC "Code of Ethical Conduct." Subsequently, the Code was adopted officially by an e-mail vote of all members, without a dissenting vote. The draft Code was initially developed Bill Young, past chairperson of CSRC, at the encouragement of NGS and others. The key elements of the Code are:

As a member or employee of CSRC, there are three guiding principles to avoid conflicts of interest:

1. *Do not use your position for personal advantage for yourself or any person with whom you have personal, business, or financial ties.*
2. *Avoid any outside activity that might give the appearance of adversely affecting the objectivity of your judgment or that could interfere with the timely and effective performance of your duties.*
3. *Do not participate in any procurement process that involves a company in which you, your family, or close friends have significant financial interests or other business or personal connections.*

The “Code of Ethical Conduct” is one of 10 policy statements adopted by the Council during the fall 2003 Council meeting and subsequent e-mail vote. For a complete text of the Code and other adopted policies, see CSRC’s website at <http://csrc.ucsd.edu>.

The adopted CSRC policy statements, together with the policies and requirements of the University of California, San Diego and CSRC *Bylaws*, guide the activities, actions, and operations of CSRC and its members. Policy statements may be adopted, revised, or canceled by the CSRC Coordinating Council or the Executive Committee, as provided by the *Bylaws*. The CSRC policy document is a “living” document and as such is subject to change. The reader must ensure that his/her document is current.

} Thank You Susie:

Susie Pike Humphrey has been CSRC Coordinator since its inception in 1998. Unfortunately, for all of us involved with CSRC, Susie has moved to another position at the University. However, until a new person is selected for the CSRC position, she continues to assist CSRC efforts to the extent feasible. Those of you familiar with Civil Service realize that filling a vacant position is not a short process. And, we thank Susie for her assistance and patience during this period.

As Coordinator, Susie was responsible for managing all of CSRC’s administrative activities – from ensuring that facilities and lunch were available for meetings to coordinating the development, execution, and administration of contracts. Specific, significant tasks included:

- Managed and accounted CSRC funds and expenditures.
- Prepared and presented expenditure reports for meetings.
- Developed, in collaboration with others, the CSRC Bylaws and attained UCSD approval.
- Prepared and processed CSRC’s request for official recognition as a “UCSD Support Group” and attained UCSD approval.
- Advised CSRC members and newly-hired consultants on UCSD procedures.
- Assisted the Director and Chairperson on meeting arrangements and other matters.

Susie was an efficient, willing CSRC Coordinator, and of most import, Susie maintained a cheerful, pleasant attitude through “trying” times. All of us affiliated with CSRC will miss her dedication and she will be difficult to replace, but we wish her the best in her new position.

Susie, thank you for your great support these past six years.

} FY04/05 Funding Not Final (Indications are somewhat less than \$1,000,000):

The FY04 Federal Budget, which began on October 1, 2003, was just recently passed for the Department of Commerce. For FY03/04, California was appropriated \$1,000,000 for “geodesy” (height modernization). However, during the past couple of weeks, CSRC has learned that NGS will retain about 10 percent for their height modernization efforts and another two percent is expected to be retained as part of the overall federal budget process. The exact retention amounts continue to be negotiated by CSRC.

In our last review of the appropriation bill, a total of about \$11 million was provided for geodesy (height modernization). Funds were allocated to eight states, ranging from a low of \$500,000 to nearly \$3 million for Wisconsin. In addition to California and Wisconsin, the other six states funded were Alabama (\$2.0 M), Louisiana (\$0.5 M), Mississippi (\$0.5 M), North Carolina (\$1.0 M), South North Carolina (\$0.5 M), and Washington (\$0.5 M). NGS has advised CSRC that Wisconsin has expended considerable State-only funds for height modernization. Possibly, this is the reason Wisconsin received nearly \$3 million; however, this is speculation. In addition, \$2 million was provided for the National Spatial Reference System.

As more information became available, CSRC will keep you advised through e-mail messages and meeting reports.

} Draft FY04/05 Work Plan Completed:

The CSRC Work Plan Committee has completed a draft Work Plan for FY04/05. The draft Plan is based on a funding allocation of \$1,000,000 (see article above). *Note: CSRC's budgets and Work Plans trail the Federal Budget by about nine months. The nine months allow for delays in passage of the Federal Budget and time to transfer the funds to CSRC.* The draft FY04/05 Work Plan provides allocations for the following efforts (amounts are in \$1,000s):

- \$60 Education and Outreach
- \$35 Data Portal Enhancements
- \$60 Basic Geodetic Development (*Improve processes/procedures for submitting projects to NGS.*)
- \$150 CGPS Operations and Maintenance
- \$120 NAVD88 Leveling for CGPS stations (*15 sites in southern California.*)
- \$350 Passive Stations, per Master Plan (*Establish 800 to 900 passive stations in northern California.*)
- \$85 New CGPS Installations (*Provide coordination with PBO.*)
- \$65 Improve the Geoid Model (*Analyze existing orthometric data and develop recommendations to improve California's geoid model.*)
- \$75 Management and Administration

Please remember that these allocations are preliminary and are subject to revisions, depending on the actual available funding. If you have any comments or desire additional information, contact Dave Stone, Chairperson of the Work Plan Committee, at DSTONE@co.riverside.ca.us.

} CSRC and PBO Cooperating on CGPS Sites:

The CSRC has agreed to escalate its cooperation with PBO in locating suitable CGCS sites. Northern California efforts include the San Francisco Bay area. Recent discussions have begun with agencies in the Monterey Bay area and Yolo County. Ongoing cooperation with Caltrans has indicated eight potential sites in Caltrans District 2 (based in Redding) and eight potential sites in District 6 (based in Fresno). The District 6 sites have been forwarded directly to the PBO organization. The District 2 sites are being reviewed before submission through CSRC.

In Southern California, CSRC has met with San Bernardino County to offer assistance with site selection in their county. Field reconnaissance and site suitability studies will begin in the near future. Similar assistance efforts will be offered to Imperial and Kern counties in the near future. CSRC has been coordinating with PBO personnel to work in the areas of immediate concern for the PBO project.

Counties and agencies that would like assistance for inclusion of CGPS sites in the PBO project are encouraged to contact the CSRC personnel in their area.

} League to Host Annual "State of NGS" Meeting:

The League of California Surveying Organizations, Southern Region will host the annual "The State of NGS" meeting on April 1, 2004, at the facilities of the Riverside County Flood and Water Conservation District in Riverside, California. The meeting is scheduled begin at 9:30 a.m. and end at 3:00 p.m. Mr. Charles Challstrom, the Director of the NGS, will provide a briefing on the status of NGS's activities. Greg Helmer, Chairperson of CSRC, will present a summary of CSRC's current projects, activities, and plans. Also speaking will be Michael Jackson, the Director of the Plate Boundary Observatory, who will provide an overview of the Plate Boundary Observatory and their progress in establishing CGPS sites.

Lunch will be served on site. Cost of the meeting is \$25.00 to cover expenses, including lunch. Any monies left over will go the League's scholarship fund.

This newsletter was compiled by Larry Fenske and Bill Young. Contributing writers are Dr. Yehuda Bock, Dick Davis, Don D'Onofrio, Larry Fenske, Greg Helmer, Cecilia Whitaker, and Bill Young.