IVS Newsletter

Issue 15, August 2006

ITRF2005 in Final Validation Stage

– Axel Nothnagel, Geodetic Institute of the University of Bonn

In late 2004, the International Earth Rotation and Reference Systems Service (IERS) issued a call for contributions to the next realisation of the International Terrestrial Reference Frame (ITRF), the ITRF2005. It will follow the ITRF2000 which has been in use since 2001. A terrestrial reference frame consists of a set of station coordinates and velocities either from a single technique, like the VLBI Terrestrial Reference Frame (VTRF2005), or from multiple techniques, like ITRF2005. The ITRF2005 will be the official worldwide reference frame which will be used, for example, in satellite orbit determinations of altimeter satellites and will, thus, have a direct impact on sea-level investigations. If results of different techniques are combined into a single frame, as many as possible local ties—i.e. measurements between the reference points of the different techniques employed at one observing site—are needed with highest accuracy. The ties are as important as the space geodetic measurements themselves since they are the linking elements between the VLBI, SLR, GPS, and DORIS frames.

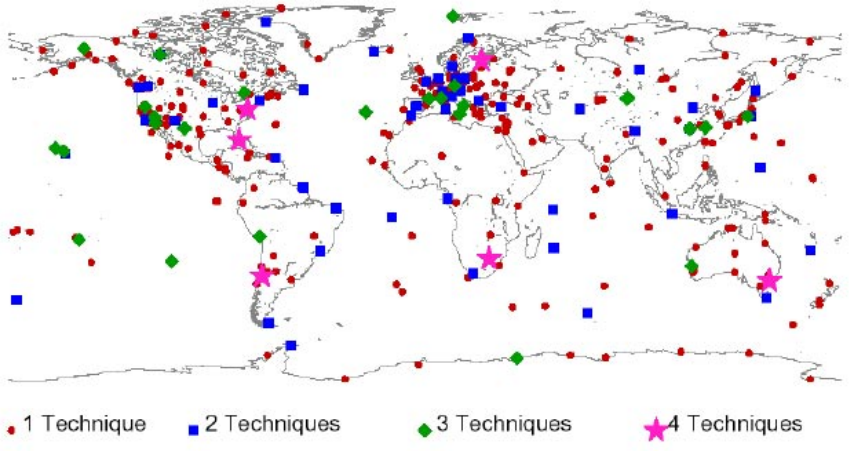
Unlike for previous ITRFs, the call of the IERS was not addressed to individual space geodesy analysis centers but to the services of the International Association of Geodesy (IAG), i.e., to the IVS, the International GNSS Service (IGS), the International Laser Ranging Service (ILRS), and the International DORIS Service (IDS). They were charged with the task to deliver combined data sets of the different analyses of their technique analysis centers in order to produce the best possible input to the final product.

In the case of IVS, the IERS asked for individual data sets for each VLBI network and single baseline observing session of 24-hour duration in SINEX format (see e.g. IERS-website, http://tau.fesg.tu-muenchen.de/~iers/web/sinex/format.php). The official contribution of the IVS has been computed by the IVS Analysis Coordinator's office at the Geodetic Institute of the University of Bonn, Germany. The details of the combination process will be published in a paper which has been submitted to the Journal of Geodesy, Special Issue VLBI.

A preliminary version of the ITRF2005, dubbed ITRF2005P, with its set of station coordinates and velocities was released to a small group of scientists for validation in June 2006.

The validation process of the VLBI positions and velocities for the currently operational VLBI core network shows a very good agreement with the IVS realisation of the VLBI terrestrial reference frame, the VTRF2005. The difference in the scale factor is only -5.2×10^{-11} with a rate of $+1.7 \times 10^{-11}$/year which is equivalent to 0.1 mm/year at one Earth radius. The rotations and translations between ITRF2005P and VTRF2005 frames do not exceed 5 mm.

Several VLBI sites, however, still need a closer look since the discrepancies exceed any accuracy limits which are expected from a modern reference frame. Here, mainly the old mobile sites of the 1980s observed only in single occupations produce large differences which originate from the missing velocity information. Another item of concern is the velocity of GILCREEK after the Denali earthquake in 2002 which in ITRF2005P is different from the pre-earthquake velocity by a few mm. All these discrepancies are currently being discussed and ITRF2005 should be released in the next couple of weeks.

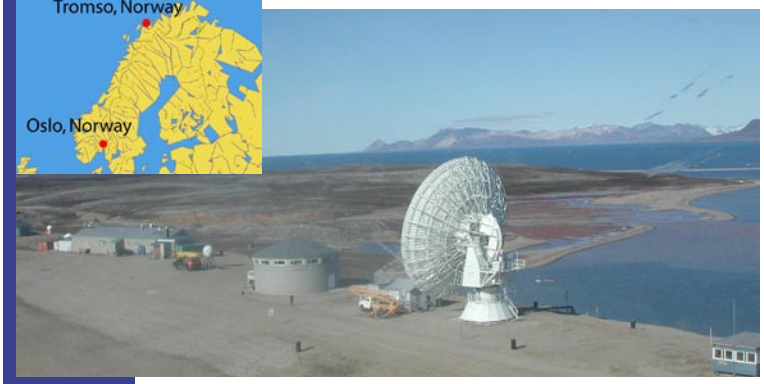


Distribution of ITRF2005P sites with co-located space geodetic techniques of VLBI, SLR, GPS, and DORIS.

Permanent Component

Ny-Ålesund, Spitsbergen, Norway

Ny-Ålesund is a busy VLBI station in the far north providing geometrical strength to many IVS networks. The station is operated by the Norwegian Mapping Authority (NMA) on the island of Spitsbergen. Newsletter Editor Hayo Hase caught up by e-mail with the VLBI Coordinator Svein Rekkedal.



Ny-Ålesund's VLBI station as seen from the air. The 20-m antenna is located right across from the runway. The round building houses the control room. Kings Bay (Kongsfjorden) can be seen in the back. (below) The arrival of the airplane is always a big event in Ny-Ålesund.

Ny-Ålesund is the northernmost VLBI station of the IVS. Where is Ny-Ålesund located? And how do you get there?

Ny-Ålesund—an old coal mining "city"—is located at 78.93ºN and 11.87ºE, in northwestern Spitsbergen, the largest island of the Svalbard archipelago. A webcam on Zeppelin Mountain provides a view of town from the south (http://www.nilu.no/Onlinebilder/Zeppelin/zeppelin.jpg).

The regular way for people working at the site to get to Ny-Ålesund is by plane. You fly either from Norway's capital Oslo or from Tromsø (a city at almost 70ºN on mainland Norway) to Longyearbyen, Spitsbergen using commercial airlines. To get from Longyearbyen to Ny-Ålesund, you have to book a flight with "Kings Bay AS"—the company that owns the area where the station is located (http://www.kingsbay.no). Unless you have business in Ny-Ålesund, there is a good chance that there is no seat available for you on the 19-seater Dornier airplane.

Is it possible to visit Ny-Ålesund as a tourist? And how many people are living in Ny-Ålesund?

Yes, you might go there as a tourist. But unless you want to make the trip from Longyearbyen by snow scooter or ski, you have to join a cruise during the summer months (June to September).

The coal mining activity was brought to an end in the early 1960s. Today Ny-Ålesund is a site for scientific studies of the artic environment. There is not much field work on the tundra happening in winter; thus only 25 to 30 people stay here during the polar night. When light returns around March/April, the number of 'inhabitants" increases steadily to 100–150 in July/August. After that the number starts to decrease again.

Why was a radiotelescope constructed in a location so difficult to access?

Norway is rather concerned about the environment in general; and environmental changes in the Arctic are of great importance. Thus, the Minister for the Environment could be convinced to support the geodetic work in realizing a reference system that is as reliable as possible.

One of the real nice things about Ny-Ålesund is that, even though it is located about 11 degrees south from the North Pole, you can go there by plane (800 meter runway) all year long; and regular ships visit the harbor during more than 5–6 months of the year.

When did VLBI operations begin at Ny-Ålesund?

The very first fringe test was carried out in the autumn of 1994.

Who is working in Ny-Ålesund? Who does what? Are you permanently there? Tell us about your shift plans!

Since July 2006, we have two full positions for Ny-Ålesund. Helge Geir Digre (mechanics) and Leif Morten Tangen (electronics and RF) share the position of Station Manager. They both have a 50% position with four months of their time in Ny-Ålesund. Helge replaced Leif Morten at the end of June. Their contracts are time limited. Both were renewed last year and will expire in the second half of 2008. On July 3, Jan-Ivar Tangen started to work as Station Engineer (his background is electricity and IT). He has a 12-months engagement, so the next year he will be busy learning how to operate and maintain the VLBI system. In addition to the staff at the station, Svein Rekkedal and Rune Ivar Hanssen handle the administrative tasks from the mainland.

Ny-Ålesund's VLBI personnel. (top) (left to right) Svein Rekkedal and Rune Ivar Hanssen. (lower left) Jan-Ivar Tangen and Leif Morten Tangen. (lower right) Helge Digre on a boat trip.

In the last few years, our budget was severely reduced. From mid-summer 2003 to July 2006, our staff was cut from nominally three to one person. The latest political signal indicates a regular budget for 2007. Thus we have started to engage more personnel.

Leif Morten has asked for a one-year leave-of-absence to work as Station Manager at the Norwegian research station "Troll" in Antarctica. If there is anyone interested in spending a challenging year in the high Arctic, please contact either me (svein.rekkedal@statkart.no) or Rune Ivar Hanssen (rune.hanssen@statkart.no)!

How is life beyond the polar circle? There is no night right now...

It is dark and cold in winter, and bright and intense in summer. In Ny-Ålesund, the sun does not set from April 19 to August 27. Most people think this is the best part of the year—with skiing and snow scooter tours possible any time during the day's 24-hours, snow conditions permitting. Then, boat season takes over and lasts until the temperatures drop and the water starts to freeze at the end of September. There are people who think that the winter is just as enjoyable—with its occasional bright northern lights (aurora borealis) and/or full moon over deep blue glaciers. In any case, whenever you go out into the wilderness, you have to carry a rather heavy weapon to protect yourself from the King of the Arctic—the polar bear.

Which IVS observation series do you participate in? Are you doing non-IVS work with your radiotelescope?

As a geodetic radiotelescope, we participate in R1, T2, R&D, RDV, and EURO experiments. Only in very rare occasions do we participate in non-IVS experiments.

Recently, your station got broadband connectivity for e-VLBI. How much bandwidth did you achieve? Are you doing e-VLBI regularly? What is your experience so far? Is the antenna remotely controlled from Hønefoss?

We are working together with UNINETT, NASA, and Haystack to investigate the possibilities of doing e-VLBI with Ny-Ålesund. So far, an R1 session was successfully e-transferred, and right now an R&D session is being e-transferred. Due to technical problems with the radio link between Ny-Ålesund and Longyearbyen, the capacity is currently 85 Mbps. We like to stress that this is a test which is carried out thanks to the fact that UNINETT offers us the line for free during the test period. Unfortunately, the commercial price we would have to pay if this was not a test (provided my info is correct) is far beyond what we can afford. We have not tried to operate the antenna from Hønefoss, even though we think that it should be possible.

Do you operate other geodetic instruments?

In the harbor, we support a tide gauge for the Norwegian Mapping Authority (NMA). Occasionally, we support our French colleagues with their Doris equipment. NMA operates four GPS receivers (two are IGS stations), and together with the Japanese National Astronomical Observatory in Mizusawa, we operate a superconducting gravimeter.

What are the future plans of NMA regarding VLBI?

We believe Ny-Ålesund has proven to be an important and reliable site for geodetic VLBI. We work hard to make our owners, the Norwegian Government, understand this. We hope we can convince them to improve our budget so that we will be able to increase the number of observation days to well above 120 per year.

And, finally, working in such a remote place, where would you spend your dream vacations?

Helge: Australia; Jan: Gotland, Sweden; Leif: Thailand; Svein: Kokee.

(top) The village of Ny-Ålesund seen from the harbor area. (center left) A walrus colony not too far away from Ny-Ålesund. (Center right) Kings Bay and Ny-Ålesund harbor with a visiting cruise ship. (right) Aerial view of a glacier calving into a neighboring fjord.

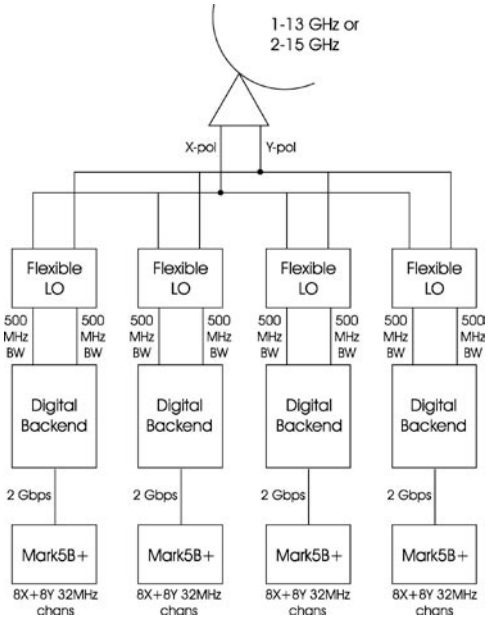
Progress on VLBI2010

– Bill Petrachenko, NRCan (for the VLBI2010 Committee)

The VLBI2010 Committee (V2C) was established on Sept. 12, 2005 at the 14th IVS Directing Board meeting at USNO—see Issue 13 of the Newsletter. Many of you are aware of its role to implement the VLBI2010 plan and to promote research into the improvement of the VLBI technique. Its work is essential for maintaining the relevance of VLBI into the future.

Information avenues. A good flavor of the work and discussions of the V2C to date can be found by browsing the email bulletin board (http://ivscc.gsfc.nasa.gov/pipermail/ivs-v2c) and the series of memos (http://ivscc.gsfc.nasa.gov/publications/memos). I encourage everyone to do so. I also encourage all to participate actively whenever you have relevant ideas, comments, or work. Participation in both the email exploder and memos is open to everyone. The address for sending emails is ivs-v2c@ivscc.gsfc.nasa.gov, and memos can be submitted directly to Dirk Behrend (dbb@ivscc.gsfc.nasa.gov). You can submit memos in PDF, DOC, or WP format, and don't forget to include title, author(s), and date.

Broadband delay approach. At the V2C face-to-face meeting in Chile, the definition of specifications for the VLBI2010 antenna was identified as the most pressing topic. These specifications are needed urgently to support proposals in several countries (e.g., Australia and Korea) to build new VLBI antennas for geodesy. In this regard, one exciting concept is being explored. It involves the use of very broadband feeds (2-15 GHz) and multiple IF channels to reliably resolve RF phase, even at low signal-to-noise ratios. It will enable extremely precise delay measurements to be made while using comparatively small and cost effective 12-m class antennas.



Block diagram of a possible broadband delay system.

The lower cost of these antennas will make replacement of existing, old antennas and the addition of new stations more affordable. In addition, since the smaller antennas are light, faster antenna slew rates can be contemplated, leading to a larger number of observations per day. The broadband concept, however, is untested. Simplified theoretical and numerical analysis indicates that it should work well. The impact of real-world complications, such as source structure, instability of electronics, and RFI is, as yet, not known in detail. Efforts are currently underway to investigate them theoretically and, at the same time, plans are being made to develop proof-of-concept hardware to test the idea experimentally.

Simulations. One other major accomplishment stimulated by the V2C is the development of Monte Carlo simulators at Technical University of Vienna by Johannes Boehm and Joerg Wresnik, and at GSFC by Dan MacMillan. This type of simulator is very powerful for evaluating the performance of network configurations, schedules, and observing scenarios without needing to build hardware or perform experiments. The output of these simulators is only as reliable as the detail and realism of the models they use. For now, the stochastic models for the clock and atmosphere are fairly simple, but plans exist for enhancement. Comparisons have been made between analysis of real data and simulated data with satisfactory results. The Monte Carlo simulators have generated a great deal of interest within the V2C, and preliminary results have been generated for new network configurations and observing strategies.

Other improvements. In addition to these major thrusts, the V2C maintains an interest in other aspects of VLBI where improvements may be forthcoming, e.g.: developing new strategies for handling the troposphere, including the use of water vapor radiometers; studying the stability of electronics and making improvements to calibration techniques; determining the impact of source structure and the feasibility of making source structure corrections; improving the precision of the delay observable; reducing capital and operating costs of VLBI systems; increasing the number of observations per day; determining the severity of RFI and exploring methods for reducing its impact; increasing data recording rate; and making more operational use of e-VLBI.

Upcoming event. The next big event for the V2C is a face-to-face meeting to be held at Haystack Observatory on Friday, Sept. 15, 2006. It is scheduled immediately before the 16th IVS Directing Board meeting and the 5th International e-VLBI Workshop, both also being held at Haystack Observatory. All are welcome. The format will include a number of informal presentations followed by discussion. The emphasis will be on topics relating to the definition of specifications for the VLBI2010 antenna. However, time permitting, any topic relevant to the improvement of VLBI will be considered. So, bring your interest, enthusiasm, expertise, and topics for discussion, and we'll look forward to seeing you there.

Research is what I'm doing when I don't know what I'm doing.
- Wernher von Braun

News...

IVS Citation Instructions

– Dirk Behrend, NVI, Inc./GSFC

The IVS has adopted a strategy to ensure acknowledgement of the usage of IVS data and products. This strategy is aligned with the other measurement services of the International Association of Geodesy (IAG) and can be summarized as follows:

1. Identify a peer-reviewed paper that provides a general description of the IVS and can be used as reference when acknowledging the use of IVS data or products. The choice of the peer-reviewed paper will be revisited periodically and updated if a more recent and suitable reference becomes available. The Directing Board agreed to use the following publication as reference until further notice:

   «W. Schlueter, E. Himwich, A. Nothnagel, N. Vandenberg, A. Whitney, "IVS and Its Important Role in the Maintenance of the Global Reference Systems", Advances in Space Research, Vol. 30, No. 2, pp. 145-150, July 2002.»

2. Peer-reviewed papers about IVS-related work and products are requested to be sent to the Coordinating Center. These will be collected on the IVS web site resulting hopefully in an exhaustive list. At least it is our goal to get as complete a list as possible of peer-reviewed articles stemming from the IVS.

3. The Coordinating Center implemented a "citation instruction" notice, requesting that the paper identified in (1) be cited in any publication depending on the IVS. The citation information is directly linked from the IVS home page under the "Acknowledge IVS" heading; to get directly to the citation page direct your web browser to the URL http://ivscc.gsfc.nasa.gov/publications/citation.html.

4. When reviewing papers, make sure that the citations of the IVS are included—where this is applicable. Encourage any editors to do the same thing.

5. Continue to remind people to cite sources.

Furthermore, please include VLBI as a keyword in your papers. A final result will hopefully be that the IVS achieves a higher profile in the literature.

Why is such a strategy necessary? All too often it seems that the existence of the Terrestrial Reference Frame and the Celestial Reference Frame as well as the continued provision of Earth orientation parameters are taken for granted. It is overlooked that it requires significant resources to provide these frames or parameters. Apparently, it is necessary to foster awareness and obtain recognition for our work in maintaining the necessary infrastructure and services.

A key issue for the IVS components is how to secure funding not only for the near-term but also for the long-term future. This is becoming increasingly important as organizations contributing to the IVS (and the other IAG services) have to demonstrate their usefulness for continued funding of their activities in support of science or relevant programs. In acknowledging the use of IVS and VLBI data and products, we hope that we can build a stronger case for future proposals and forward budget planning.

Help Keep the IVS Associate Member List Up-to-date

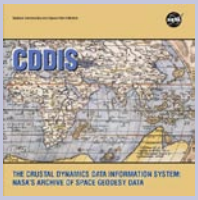
It is in the nature of an organization that there is a constant flow of people. The IVS is no exception, but it is relatively stable in this respect. Still people move on to other opportunities and younger colleagues enter our community. Also, addresses and e-mail contacts change. To the benefit of all, the membership database of the IVS should be as current as possible. For that, the Coordinating Center would like to request your help in making this happen.

According to the IVS Terms of Reference, Associate Members are individuals who are associated with a Permanent Component supported by a Member Organization. A Member Organization, in turn, is an organization that operates or supports a permanent component of IVS. More information can be found at the IVS web site at http://ivscc.gsfc.nasa.gov/about/org/members/index.html.

The Coordinating Center requests that the contact persons of the Permanent Components check the names of the Associate Members listed for their component and indicate any necessary changes. The current member list is available on the web site ordered either alphabetically by name (http://ivscc.gsfc.nasa.gov/about/org/members/assoc_name.pdf) or by country and organization (http://ivscc.gsfc.nasa.gov/about/org/members/assoc_org.pdf).

Also, if you note that this Newsletter is sent to a wrong address, please provide the updated address to the Coordinating Center (dbb@ivscc.gsfc.nasa.gov). Furthermore, if your career leads you away from a permanent component, but you don't want to lose contact to VLBI or IVS, you should consider becoming a Corresponding Member. Please contact the Coordinating Center if you intend to do that.

CDDIS Information Brochure



NASA's Crustal Dynamics Data Information System (CDDIS) has archived space geodetic data for over two decades. It serves as a Data Center for all four measurement services and is one of the three primary Data Centers of IVS. Please find included with this newsletter an information brochure on the CDDIS.

NEWS...

Next Generation Correlator Workshop Held

– T. Hobiger, Vienna University of Technology
– T. Kondo, NICT

Participants at the Next Generation Correlator Workshop in Groningnen.

The 3rd RadioNet Engineering Forum Workshop "Next Generation Correlators for Radio Astronomy and Geodesy", was held in Groningen, The Netherlands, from June 26–29. Groningen is a moderately sized city in the Northern Netherlands. The event was hosted by the Joint Institute of VLBI in Europe (JIVE) and about 80 people from around the world followed the call from the organizers to participate in this workshop on future correlator developments. The scientific program covered the background and reviews of correlators as well as the current developments of hardware correlators. Furthermore, hybrid and software correlators were presented; and talks were given about next generation correlators and its demonstrators.

The main focus was on the SKA (Square Kilometre Area), as it is the most challenging radio astronomy project to be dealt with during at least the next 15 years. Experiences from LOFAR (LOw Frequency Array) and several SKA demonstrators were discussed, and bottlenecks, such as network throughput and failed scaling of architectures, were pointed out. Most of the planned correlator projects can easily handle proposed network configurations and data rates of VLBI2010 (e.g., the upcoming eVLA correlator can handle 20 VLBI station networks in the background, without even coming close to its maximum capacity).

Another big topic of this meeting was the use and flexibility of FPGAs (Field Programmable Gate Array). FPGAs are becoming more and more attractive for correlator designers since FPGA boards are easily adapted to several tasks (polyphase filtering, correlation units, beam formers, among others). Additionally, the border between pure software correlators and FPGA based machines is further diminishing. Moreover, abstract modelling tools like Matlab/Simulink can design, optimize, and test new FPGA correlators, before the routines are coded to the chips.

The LOFAR project, on the other hand, showed how super-computing power can be used to handle and process huge amounts of data coming in real-time from several hundreds of antennas. Several groups demonstrated that smaller versions of software correlators, with growth rates closely following those of Moore's law, have already reached the capacity to easily handle VLBI2010 type data streams. But it was also pointed out that ASICs (in combination with FPGAs) might be the only choice for huge solutions like the SKA, as processor speed will not increase as rapidly as it has in the past. Furthermore power consumption (future large scale correlators will take 100s of Megawatt) and cooling of components were pointed out as topics that will become more and more important for future architectures.

In addition to the presentations, two panel discussions took place. The first one, entitled "Hardware vs. Software vs. Hybrid Correlators", concluded that the destinction between hardware correlators and software correlators gets more and more blurred and that the best solution for large correlators might be found in hardware solutions. The second panel discussed the interoperability and synergies between different groups, developers and scientific fields. The importance of Astrometry and Geodesy as partners of the correlator teams was pointed out, as was the view that future developments should consider the needs of groups like the IVS.

The meeting was closed with an excursion to the Blue Gene correlators—which will process the LOFAR data—and a demonstration of 3-D visualization capabilities at the computing center of the University of Groningen.

More information on the meeting and the scientific program can be found at: http://www.radionet-eu.org/rnwiki/NextGenerationCorrelator.

Upcoming Meetings...

26th IAU General Assembly
Prague, Czech Republic
August 14-25, 2006

e-VLBI Workshop,
Westford, MA, USA
September 17-20, 2006

GGOS Workshop
Munich, Germany
October 8-9, 2006

GRF2006
Munich, Germany
October 16-18, 2006

APSG 2006
Jeju Island, Korea
October 16-18, 2006

AGU Fall Meeting
San Francisco, USA
December 11-15, 2006

European VLBI Meeting
Vienna, Austria
April 12-13, 2007

8th IVS Analysis Workshop
Vienna, Austria
April 14, 2007

EGU General Assembly
Vienna, Austria
April 15-20, 2007

Fourth IVS TOW
Haystack Observatory
Westford, MA, USA
April 30-May 3, 2007

IUGG General Assembly
Perugia, Italy
July 2-13, 2007

http://ivscc.gsfc.nasa.gov/meetings

Handling Mark 5 Disk Modules

—Mike Poirier, MIT Haystack Observatory

For the past year or more most of us have been using the Mark 5A recording system. Though this change from tape has led to a tremendous improvement in reliability, it has also raised some new issues that must be addressed. In this note, we address the issue of the handling of the Mark 5 disk modules, which differs from tape in a number of ways. Please follow these instructions:

1. Like tape, a disk module cannot withstand a drop onto the floor outside of its shipping container. The disks are fragile, and the high G-forces created by even a small drop or careless handling on a hard surface can potentially damage a disk.
2. It is recommended that disk handling be done on soft surfaces whenever possible. Storage shelves should be covered with a soft material such as static-resistant carpeting.
3. Carefully inspect a disk pack for any mechanical damage when it arrives from the correlator. Remove the shipping covers and carefully place the module on a hard, flat surface to confirm that it lies absolutely flat with no rocking. With a known square jig, also check that the back corners are square. If either of these two tests fails, loosen and re-tighten modules screws as necessary to assure proper module alignment.
4. Inspect the connector on the back of the module for damage to the mounting or to any pins.
5. To insert a module into a Mark 5 chassis:
   a. Verify that the key switch is in the "Off" position.
   b. Fully depress the front-panel locking lever.
   c. Carefully slide the module into the chassis until it stops (about 1cm short of full insertion). Do not force and do not lift the module; if there is a need to exert any force, this is an indication of module misalignment. Immediately stop, remove the disk pack, and re-check the module alignment (Step 3 above) before proceeding.
   d. While placing gentle pressure on the upper left corner of the module with one hand, carefully lift the locking lever to the full upright and locked position. Do not force. Forcing can damage the connectors of both the Mark 5 unit and the module. If any undue force seems to be necessary, immediately remove the module and re-check alignment.
   e. Turn the key switch to the "On" position (90 deg clockwise) to apply power and complete the mounting operation.
6. To remove a module:
   a. Turn the key switch to the "Off" position and wait several seconds while the disks spin down.
   b. Fully depress the front-panel locking lever. The module will back out about 1 cm.
   c. Slide the module out and remove it.

If a module is damaged beyond easy repair, ship the disk pack back to the correlator where a qualified technician will repair the module and put it back into service. As a reminder, a mechanically damaged disk module may have hard-disk damage that is not detected until further testing is completed. Conditioning of the disks will be covered in a subsequent column.

Disk handling practice during the 2005 Technical Operations Workshop.

Newsflash: CONT08 on the Horizon

The Observing Program Committee (OPC) is considering another continuous VLBI campaign. This campaign is planned to be observed in the calendar year 2008 and is thus dubbed CONT08. The details and exact time frame need still to be worked out. Still, those stations who anticipate being part of this effort may consider this when doing their mid-term budget planning. Send comments and inquiries to the Coordinating Center (dbb@ivscc.gsfc.nasa.gov)

The IVS Newsletter is published three times annually, in April, August, and December. Contributed articles, pictures, cartoons, and feedback are welcome at any time.

Please send contributions to ivs-news@ivscc.gsfc.nasa.gov.
The editors reserve the right to edit contributions. The deadline for contributions is one month before the publication date.

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The newsletter is published in color with live links on the IVS web site at http://ivscc.gsfc.nasa.gov/.

Tape Days Are Numbered

– Dirk Behrend, NVI, Inc./GSFC

With the advent of the Mark 5 system, it was just a question of time when the old tape recorders and tapes would become obsolete. And it appears that tape drives are close to retirement now. In the 2006 observing plan, only two session types made use of tapes: OHIG and RDV. OHIG used tapes mostly because of the long time span between observing and correlation involving a long tie-up of the media (over a year). The impact of the long tie-up will be mitigated by recording all three sessions of an OHIG campaign onto one Mark 5 disk module per station.

Tape drives and tapes will soon be a sight of the past.

The 20-station RDV sessions employed tapes for some stations for the limited number of Mark 5 playback units at the Socorro correlator and the fact that correlation was run in one pass. Here the VLBA plans to go to 14 station units (currently 11) and to a correlation in several passes. The July 11 RDV session was observed disk-only in order to prove the practicality of the approach. We expect a successful test.

In addition, there were three remaining "tape stations" (Mark III only) at the beginning of the year. But Yellowknife already converted to Mark 5, and Simeiz and Parkes are in the process of doing so.

We plan on doing no more tape observing in the remainder of the year—provided the Mark-5-only RDV test is successful—and intend to work off the last tape-observed sessions. Hence, the stations may already plan the retirement feast, whereas the correlators will have to wait a little bit longer. But the last tape action is clearly in sight. Here's to the end of an era!

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