MONTHLY STATUS REPORT
Engineering & Technical Services
August 2003

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DESCRIPTION: The Gemini Near Infrared Spectrograph is a $4.2 million long-slit spectrometer that will be mounted on the Gemini South 8-meter Telescope on Cerro Pachon, Chile. It will operate from 1 to 5 um and will offer two plate scales and a range of dispersions. The instrument is scheduled for completion in third quarter 2003. See regular monthly reports on the web at http://www.noao.edu/ets/gnirs/.
DESCRIPTION: The MONSOON Image Acquisition System is the NOAO solution for scalable, multichannel high-speed image acquisition system. Additional information can be found at the MONSOON website [http://www.noao.edu/ets/monsoon/].

The initial focus of MONSOON is to develop an IR Laboratory Test Set for the RIO ORION Project. This capability will also support the RIO VIRGO and Rockwell HAWAII 2 family of FPAs, prove the MONSOON system concept and provide the baselinesystem for NEWFIRM implementation. This test set is composed of a Linux-Based Ghz PC, 1Gb/s FiberLink, Detector Head Electronics Chassis (DHE), one Master Control Board (MCB), one Clock & Bias Board (C&B), and two 36 Channel IR Acquisition Boards (IRACQ), along with associated software.

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RECENT ACCOMPLISHMENTS

- Reached major milestone in April: Bits to FITS demonstrated in lab system
- Data path from the PAN computer to the sequencer mpu and PAN decode logic on the Master Control Board and then to the peripheral boards has been verified to perform as expected. Data path from peripheral boards to the master control board and then to the PAN computer have been verified as functional. Data taking at maximum acquisition rates (80 MPix / sec across backplane and 50 MPix / sec across the fiber) using these paths has been reliably demonstrated.
- Sequencer mpu tests performed with the result that the sequencer mpu instruction set has been verified and test sequences run successfully but we are limited to half the expected time resolution (50 ns instead of 25 ns) because of a memory problem with the design. We'll go with this and fix the problem later as it doesn't restrict us for the current milestones.
- Systran boards that required the external clock have been successfully tested and prove that earlier problem with SYNC protocol definitely restricted to either one board and / or earlier firmware revision. In addition, to get the
Systran boards to work we had to run the master control board at 130% clock speed. The firmware in the FPGAs and the board logic performed without fault at this speed.

- We have identified various faults in manufacture of the IR acquisition boards (SN001 & SN002) and with the associated daughter boards. One board (SN002) has been tested with 18 channels and shows a nominal 3.5 ADU rms noise term on all working channels (there is still one channel that needs work). 36 channels have been acquired (33 working) reliably with slightly higher noise for the channels associated with the daughter boards. This essentially tells us that the board layout is good and we are progressing with data taking to determine the boards’ characteristics for linearity, cross talk, and frequency response. So far these data strongly support the notion that the two boards required for Orion can be built with no modification to the current board design. We will put more effort into bringing the noise floor down next month.

- Issues with raw throughput of Master Control Board Bus resolved by modest coding re-design that partitioning 32 bit data word into 24 data bits and 8 control bits. This enables 1 clock per transfer instead of 3 clocks per transfer. Long-term solution to allow 32 bit data word will be re-visited later as necessary.

- We have verified that data rates required for NEWFIRM (64 Mbytes per image) are sustainable within Linux; only one Linux-based PAN will be required.

- IR Acquisition boards have been tested with 72 channels (2 main and 2 daughter boards) in simultaneous operation. Currently the optimized boards deliver roughly 2-2.5 ADU rms per channel in this mode.

- Dave Sawyer, Dave Dryden, and Peter Moore have CCD prototype working well with preliminary noise and linearity tests at levels approaching the manufacturer’s specs for the AFE 9823 ADCs. Since Peter Onaka of the IfA is interested in these same parts, we are exploring a collaborative test effort.

- Kaviraj Chopra has completed modifications to the sequencer to address timing issues and to better utilize space within the FPGA.

- Major milestone: Monsoon Software CDR was held in Tucson on July 1, 2003. The written report by the review committee was generated on Jul 25, 2003.

- Gustavo Rahmer was in Tucson for about 2 weeks at the start of July. Issues associated with the CLK & bias boards have been successfully resolved. Both sites now have working systems.

- MPU sequencer running successfully.

- Work with CCD prototype focused on demonstrating operation with a spare Gemini EEV chip.

- Work on ALADDIN system hardware near 95% complete; Hawaii 2 hardware, 80% complete; Orion lab system, 65% complete.

- Major milestone: Formally began operations of an ALADDIN bare readout in the NOAO ALADDIN test dewar with Monsoon. First data were successfully taken on August 8, 2003.

- Continued tests of ALADDIN system using ALADDIN III array.

- Definition phase for 8-channel CCD system nearly complete. It will use the dual slope technique and provide for of control “classic” CCDs, OTDs and (if the design allows) P channel devices. This is a cooperative development between Tucson and La Serena to get an operating system into our labs early next year to shoulder a variety of development tasks. Gustavo Rahmer is lead engineer for the design.

- Shelby Gott began development of an Engineering Console interface to MONSOON. The command line driven interface, written in Tcl/Tk will utilize elements from the existing WILDFIRE interface.

- Gustavo Raher has demonstrated basic electrical functionality of MONSOON system with Hawaii 2 CTIO interface board. (sans ROIC or array).

- Software effort includes major work on PAN libraries, processes and the Pan Daemon.

**PLANS:**

- Continued Test of IR System.

- Operate a Hawaii 2 readout at CTIO.

- Continued Development of MONSOON Software with focus on IR Test system needs.

- Continued Test of CCD Prototype System.

- Produce a functional CCD lab system based using elements form the IR system and a new CCD acquisition board to be jointly defined and produced between NOAO North and NOAO South.

- Hardware CDR to be held in the September/October time frame.

- Develop/identify/modify waveform definition language and create MPU sequencer compiler to enable efficient sequencer coding.
**DESCRIPTION:** This is a multiyear project to develop a wide field, near infrared imager designed for use at the Cassegrain focus of the Mayall 4-M telescope. A draft of the concepts for this instrument can be found at [http://www.noao.edu/ets/newfirm/newfcon.html](http://www.noao.edu/ets/newfirm/newfcon.html).

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**GENERAL:** Top assembly definition of the instrument is essentially completed, and the main efforts are now directed at lens cell design and dewar assembly design. An internal design review to assess the readiness of the filter wheel for transition to CTIO for fabrication was held on August 29th. This assembly should be ready to send to CTIO by September 8th.

Thermal modeling of the detector mount and the surrounding environment is complete, and the results will be used in the design of the thermal distribution assembly.

NOAO has received two of the three blanks for the large optics, and provided them to the U of A. Coatings for the large optics are in the bid process.

The Guider optical and mechanical designs are on track and optics for the guider are currently in the bid process. The guider electrical design is set to begin in September. A camera for use in the guider has been ordered for evaluation.

The project is on schedule except for delays in starting work on the lens cells and on the guider Electronics. There is no impact on the June 2005 instrument delivery date to KPNO at this time.

**SCHEDULE:**
The NEWFIRM project schedule and milestone chart may be viewed on the project web site at www.noao.edu/ets/newfirm.

**ACCOMPLISHMENTS:**
- Thermal modeling and analysis of the detector and mount completed
- Top Assembly design completed
- Lens cell design started
- Two of the three large optics blanks have been received

**PLANS:**
- Place order for Guider Optics in early September
- Release Filter Wheel Assembly package to CTIO by September 8th.
- Start mechanical fabrication tasks in the Instrument Shop by the end of September
- Complete Guider electrical interface and design documentation by mid-September

**Personnel Changes:**
- Scott Bulau has joined the project ½ time to work on Guider Electronics effective September 2nd.
Infrared R&D Program (K. M. Merrill)

We received an Orion II bare mux for testing and verified that the new column disable feature works. We are determining the proper operating procedures and voltages for the new ROICs to ascertain whether the goals for the Orion ROICs have been met prior to initiating the production of a working hybrid.

Al Fowler and Michael Merrill attended the SPIE Annual Meeting in San Diego where Michael Merrill presented the paper entitled:

**Orion II: The Second Generation Readout Multiplexer for the Largest Infrared Hybrid Focal Plane**

K. M. Merrill, A. Fowler, and W. Ball, NOAO
A. Henden and F. Vrba, USNO Flagstaff
C. McCreight, NASA Ames

**ABSTRACT**

The Orion program developed a 2048x2048 infrared focal plane using InSb PV diodes for detectors. Several of these focal planes have been produced. However, the yield of the original readout multiplexer was not up to expectations owing to unanticipated shorts in the fabrication process. Since these shorts occurred at the metal 1-metal 2 crossover points and there are over 9 million such crossovers, the design had to be modified to work around these problems. Thus the Orion II readout was developed. The work is being done at the Raytheon Vision Systems (RVS) division (most recently Raytheon Infrared Operations, but better known as SBRC) by many of the same people who created the Orion I and ALADDIN focal planes. The design is very similar to the Orion I design with the addition of circuitry to work around the effect of the metal 1-metal 2 shorts. In this paper we will discuss the unique design features of this device as well as present test data taken from the new devices.
Electronic Design (D. Stover)

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<td>68</td>
<td>529</td>
<td>23</td>
<td>70</td>
<td>46</td>
<td>92</td>
<td>34</td>
<td>27</td>
<td>25</td>
<td>41</td>
<td></td>
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</tbody>
</table>
```
Instrument Shop (R. Repp)

Small Purchase Orders (Account Numbers, Vendors, Products Purchased, and Cost)

- NNC400-005, Precision Plating, Anodize .......................................................... $123.38
- SNG100-520, Precision Plating, Anodize ......................................................... $55.12
- SNG100-520, CB Oasis, Nickel Plating .............................................................. $394.83
- SNP140-110, Precision Plating, Anodize ......................................................... $52.00

Total Non-shop expenses ................................................................................. $625.33

Hard Purchase Orders: August 2003 (Non-Shop Accounts)

- Req Number 3119177, NNK910-100, Phoenix Heat Treat, Harden Shafts......$150.00
- Req Number 3119178, NNK910-100, Landmark Tool, Grind Shafts .......... $1,056.00

In addition to these expenses, the Instrument Shop budget contributed money to purchase needed stock, software and supplies for all projects that are manufactured at our facility.

Instrument Shop Spreadsheet (page 2) at a Glance:

- 529 estimated hours of work in progress
- 4,378 hours of potential future projects for instrument shop (Includes NEWFIRM)

Projects and Details Completed by Instrument Shop August 2003

- Flamingos Racks Test Fitted and Painted (Harris)
- Azimuth Drive Bearing Sleeves Rough Machined -- WIYN (Harris)
- Metrics of Four Azimuth Drive Units Taken at WIYN (Harris/Reddell/Repp)
- Two Waveplate Mounting Plate Mods—GONG (Hauth)
- Six Pitch/Roll Rotator Amp Output Filters—GONG (Hauth)
- Fabricate One Complete Wirerap Takeup Wheel—GONG (Hauth)
- Repair Two Wirerap Takeup Wheels—GONG (Hauth)
- Fabricate Six Mirror Covers—GONG (Hauth)
- MS33649-04 Fittings Fabbed for Labs (Rath/Staff Shop)
- Fab Motor Encoder Test Station--Phoenix (Rath/Staff Shop)
- Needle Valve Modification for Air Bag—FTS (Rath/Staff Shop)
- Leak Test of Air Bags and Assembly—FTS (Rath/Staff Shop)
- Repair Catseyes Dashpot Assemblies--FTS (Rath/Staff Shop)
- Repair Bent Helium Camera Lines—FTS (Rath/Staff Shop)
- Fab AN Fitting for Compressed Tank Regulator—LSST (Rath/Staff Shop)
- Rework Interface Dust Cover—SQIID (Rath/Staff Shop)
- Rework Interface Motor Test Fixture—SOAR (Rath/Staff Shop)
- Evaluate and Rework Drifting Mirror Problem—FTS (Rath/Staff Shop)
- Misc. Details for HYDRA/WIYN (Stein)
- SOAR Final Assembly (Stein)
## Instrument Shop (cont.)

<table>
<thead>
<tr>
<th>DRAWING NUMBER</th>
<th>DRAWING TITLE</th>
<th>PROJECT</th>
<th>INSTRUMENT MAKER</th>
<th>QUEUE HRS (PQH)</th>
<th>ECD</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 DRAWINGS</td>
<td>NEWFIRM BUSHING TEST</td>
<td>NEWFIRM</td>
<td>RON HARRIS</td>
<td>4</td>
<td>9/30/2003</td>
<td>INSPECTION BY CADILLAC GAGE</td>
</tr>
<tr>
<td>SKETCHES</td>
<td>FLAMINGOS ELECTRONICS RACKS</td>
<td>KPNO</td>
<td>RON HARRIS</td>
<td>36</td>
<td>9/8/2003</td>
<td>BUILDING--9/8/03 IS HARD DEADLINE</td>
</tr>
<tr>
<td>MANY</td>
<td>AZIMUTH DRIVE BEARING SLEEVES</td>
<td>WIYN</td>
<td>RON HARRIS</td>
<td>48</td>
<td>9/30/2003</td>
<td>OF DRIVE HOUSINGS AND FAB COMPLETION</td>
</tr>
<tr>
<td>N/A</td>
<td>LENS SLIDE MODS</td>
<td>GONG</td>
<td>RON HARRIS</td>
<td>8</td>
<td>9/12/2003</td>
<td></td>
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<tr>
<td>N/A</td>
<td>PUMP REBUILDING</td>
<td>GONG</td>
<td>RON HARRIS</td>
<td>8</td>
<td>9/15/2003</td>
<td></td>
</tr>
<tr>
<td>MANY</td>
<td>MISC. GONG DETAILS</td>
<td>GONG</td>
<td>DAVE HAUTH</td>
<td>20</td>
<td>8/29/2003</td>
<td>EST=SOLID QUOTE OF DRAWINGS IN QUEUE</td>
</tr>
<tr>
<td>N/A</td>
<td>MISC STAFF SHOP WORK</td>
<td>MAINLY NSO</td>
<td>STEVE RATH</td>
<td>160</td>
<td>9/30/2003</td>
<td>AND QUEUE WORK (QUEUE=420 HRS)</td>
</tr>
<tr>
<td>N/A</td>
<td>M1 SHOP MOVE</td>
<td>LSST</td>
<td>ROGER REPP</td>
<td>60</td>
<td>9/30/2003</td>
<td>CLEANUP STILL REMAINS &quot;LOW PRIORITY&quot;</td>
</tr>
<tr>
<td>MANY</td>
<td>MISC IN SHOP HYDRA DETAILS</td>
<td>HYDRA/WIYN</td>
<td>JOHN STEIN</td>
<td>185</td>
<td>9/30/2003</td>
<td>QUICK AS OTHERS ARE FINISHED</td>
</tr>
<tr>
<td>SS-E200</td>
<td>SOAR ADAPTER WHEEL ASSEMBLY</td>
<td>SOAR</td>
<td>JOHN STEIN</td>
<td>0</td>
<td>8/6/2003</td>
<td>COMPLETE 8/11/03</td>
</tr>
<tr>
<td>TOTAL HOURS IN SHOP: 8/27/03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>529</td>
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</table>

### IN ORDER EXPECTED

<table>
<thead>
<tr>
<th>ANTIQUATED UPCOMING PROJECTS</th>
<th>ESTIMATED HOURS</th>
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</thead>
<tbody>
<tr>
<td>~6 DRAWINGS MODIFICATIONS TO GNIRS</td>
<td>80</td>
</tr>
<tr>
<td>MANY/DEVELOPING HYDRA UPGRADE</td>
<td>250</td>
</tr>
<tr>
<td>MANY/DEVELOPING AND MISC OTHER ASSYS</td>
<td>128</td>
</tr>
<tr>
<td>MANY AZIMUTH DRIVE AND IDLER BEARING FAB</td>
<td>300</td>
</tr>
<tr>
<td>MANY/DEVELOPING NEWFIRM NEWFIRM</td>
<td>3500</td>
</tr>
<tr>
<td>N/A FIBER MOUNTS SOLIS FDP</td>
<td>40</td>
</tr>
<tr>
<td>N/A FIBER GUIDES/SOLIS SOLIS FDP</td>
<td>80</td>
</tr>
<tr>
<td>N/A WALL LINING SOLIS FDP</td>
<td>40</td>
</tr>
<tr>
<td>N/A AIR DUCT SOLIS FDP</td>
<td>40</td>
</tr>
<tr>
<td>TOTAL HOURS: 8/27/03</td>
<td>4378</td>
</tr>
</tbody>
</table>
Optical Coating Laboratory (G. Poczulp)

Optical Shop
N-NX500-100
Shop clean up and reorganization continues with the effort this month centered on the tool storage area in the optics shop. Many of the cast iron tools were sandblasted to remove the accumulated rust that was the result of years (decades) of improper storage. One of the shelving units was relocated on the mezzanine after the new doorway location into the old second floor machine shop was marked on the wall.

SOML High Bay Lease
The LBT1 secondary blank was replaced onto the machine at the end of the month and lapping with 20u aluminum oxide was started. The IR interferometer measurements that were scheduled at SOML were inconclusive. The polishing machine was down for about a week to repair the table encoder. Bids were received for the construction of the exterior sunshade and have been received, but no action has been taken. A small roof leak near the SW corner of the test tower was identified and reported to CFO.

ATST Seeing Monitor Interferometer
S-NP412-000
Made a recorded deposition to Lisa Allman, a representative from Hartford Insurance, on 21 August 2003 to state the facts relating to the damage of the phase shifting interferometer that happened at Big Bear Solar Observatory in late May. The interferometer remains in the optics shop.

4-m Cassegrain Rotator
N-NK350-000
The small (10”x14”), Cassegrain rotator mirror was successfully aluminized in the NRC-3177 chamber. Two separate coating runs were required because both sides of the mirror needed to be aluminized.
## Optics Lab & Optical Shop (G. Poczulp)

### Upcoming Coating Lab Projects

<table>
<thead>
<tr>
<th>Chamber</th>
<th>Coating</th>
<th>Contact</th>
<th>Received</th>
<th>Need Date</th>
<th>Planned Start</th>
<th>Estimated Duration</th>
<th>Planned Completion</th>
<th>Delivery Date</th>
<th>Account #</th>
</tr>
</thead>
<tbody>
<tr>
<td>WTTM Beamsplitter</td>
<td>NRC-3177</td>
<td>Al</td>
<td>C. Corson</td>
<td>5/23/2003</td>
<td>September</td>
<td>2 days</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Three Lenses</td>
<td>NRC-3177</td>
<td>MgF2</td>
<td>A. Potter</td>
<td></td>
<td></td>
<td>2 days</td>
<td></td>
<td></td>
<td></td>
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</table>

### Completed Coating Lab Projects

<table>
<thead>
<tr>
<th>Chamber</th>
<th>Coating</th>
<th>Contact</th>
<th>Received</th>
<th>Need Date</th>
<th>Actual Start</th>
<th>Actual Duration</th>
<th>Actual Completion</th>
<th>Delivery Date</th>
<th>Account #</th>
</tr>
</thead>
<tbody>
<tr>
<td>4m Cassegrain Rotator (small)</td>
<td>NRC-3177</td>
<td>Al</td>
<td>S. Andre</td>
<td>7/21/2003</td>
<td>8/5/03</td>
<td>2 days</td>
<td>8/1/2003</td>
<td>8/4/2003</td>
<td>N-NC558-000</td>
</tr>
</tbody>
</table>

### Upcoming Optical Shop Projects

<table>
<thead>
<tr>
<th>Contact</th>
<th>Received</th>
<th>Need Date</th>
<th>Estimated Duration</th>
<th>Planned Completion</th>
<th>Delivery Date</th>
<th>Account #</th>
</tr>
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<tbody>
<tr>
<td>R. Probst</td>
<td>8/11/2003</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Vaughn</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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### Completed Optical Shop Projects

<table>
<thead>
<tr>
<th>Contact</th>
<th>Received</th>
<th>Need Date</th>
<th>Actual Start</th>
<th>Actual Duration</th>
<th>Actual Completion</th>
<th>Delivery Date</th>
<th>Account #</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Computer Services (C. Danielson)

- IBM lappers from GSA
- Get extension cord to new guest pc - remove old plug strip
- Jerry Duffek re: lappers
- New boot CD's and new labels - need more blank labels
- Req for Nero Version 6
- Ming's req for pro-active spyware detectors/eliminators - never ordered?
- Mike P re: NAV2
- Mike P re: Patches
- Jerry Smith lapper fixes
- Update Starjeep (SJ) prior to removing it from net
- Update NT-Test-Gate (NTTG) prior to removing it from net
- Load RegRun onto Eggs
- Load RegRun onto SJ
- Updates to RonH PC
- Check Retrospect client on RonH per Beth
- John Stein PC problems
- John Stein PC questions
- John Stein ScreenSaver password
- Ming's Diskeeper Ver 6 WS install - went smooth!
- Tiba updates OK
- Basset updates ok
- DS updates ok
- DS2 netshield triggered/disabled for rest of updates
- JohnA add cd writer
- John Stein PC problems again - disk fragmented/defragged
- Ghost image for pIII-733's
- Ghost image for IBM lappers
- Clone image onto 2nd IBM lapper - worked
- Jerry S GW2K 9150 lapper rebuild/problems
- Bill Schoening's new pIII-450
- Get info on 4 Dell lapper ad adaptors
- Add Xircom network/modem cards to order
- Bill S re: PIII-450; needs faster pc with more memory and good video board for cad apps
- Bill S PIII-733 w/ 3DLabs video
- OJ PIII-450
- Jay Elias PIII-733 - turned out to be Khairy's PIII-733
- M Hunten P4-2.8 Gigger - standard noao load
- Receive Nero Version 6
- Make Nero Ver 6 updates cd
- New boot cd's x 5!
- Marianne permissions on Tiba
- Talk to Beth re: Jay Elias 733 - Jay to get Rich G's old PC(2.28 G)
- Switch Jay Elias 733 to Khairy after confirming with Larry (Carl D on vac.)
- IBM lappers modem problem
- Install Bill S new PIII-733
- Set up M Hunten's new 2.8 G pc in his office
- Install Khairy new 733
- Set up Khairy's old p5-166 in peecee lab When Khairy finished return p5-166 to Scott
- Larry informed me re: old Diver to Ed Hileman; make contact with Ed Hileman
- Ed says Dave Rosin's monitor bad, could old Diver monitor be used – yes; set up old-Diver on cart for Ed to use
- Order kvm switches for Ed & Ruben (get req to Larry)
- Set up received kvm switches - need correct cables need to order
- Get Ruben's 2nd wall port working
- Move 4 port switch to Ed's office for laptop connection
- Contact Kathy re: kvm order - she has question on cable order
• Received Dell ac adaptors
• Talk to Chuck re: missing lappers & Dell lapper for him
• Put standard load on John A’s returned 733
• Talk to Mike F re: returning Nav1 733 if not going to be used
Programming Group (R. Marshall)

Behzad Abarareshi

- Fixed bug in the MPG router at WIYN; the router was reporting the azimuth motor demand values for elevation.
- Installed and tested a multiport PCI serial card on the new Hydra Linux machine, in preparation for operating Hydra on Linux.
- Participated in weekly Hydra meetings.
- Rebuilt and installed the Hydra simulator on vanilla. This will free up oatmeal for operation of Hydra hardware. A Linux version of the Hydra simulator is in the works (see below).
- Continued work on Hydra source code. I have created a new Hydra source tree and submitted it to our CVS repository on cabbage. The Hydra module is named hydra_mrg_00. Once we can operate Hydra in its current state under Linux, this repository, with a more meaningful name, will be frozen, and work on new Hydra will begin. So far all the Makefiles have been modernized, and allow automatic detection of platform (Sun or Linux), so the build process is painless. Most of the serious bugs have been stamped out, and the SunOS version has been deployed at WIYN for simulation. There are still numerous bugs which surface only on Linux. Currently I am in the process of cleaning up the code to get rid of these. Full and proper use of prototypes so far has exposed a significant number of bugs, and I will also be using lint and electric fence.

Nick Buchholz

- Continued development of the MONSOON software. Worked on coding for:
  - start time command configuration.
  - attribute command library.
  - ppx command library (completed).
  - detector specific command library Aladdin and orion II.
  - Modified libraries to accommodate changes needed by above development.
- Finalized design of configuration file/database and description of required information.
- Continued to support hardware debugging and development of ALADDIN_II and ORION_II systems.
- Began restructuring the CVS repository to make addition of Directories more convenient.

Phil Daly

- Subsequent to the Monsoon software PDR, we got a large fraction of Shelby Gott's time for the engineering interface to Monsoon.
- I worked on setting up the NEWFIRM computer (now online at newfirm.tuc.noao.edu) which involved sorting out the incorrect parts etc. Also brought the machine up to an appropriate level with external software installation and testing (DRAMA, fitsTel, cfitsio etc).
- I supported Monsoon (with NCB, of course) through to first light. Since then I've done further work on Monsoon: finalizing the cli/cmd stuff and re-visiting the panDaemon. NCB and I hope to get the full Monsoon s/w up and running this next month so that we can deprecate the dheHdwDbg and run the proper system. We've had inquiries from Keck about the software availability (since David Sprayberry's mailshot regarding first light).
- On NEWFIRM, I made the (former) gwcMonitor prototype into the NEWFIRM Observation Header System (nohs) which is 1 of the 9 tasks in the NEWFIRM Observation Control System (NOCS). The NOHS now produces (true) FITS-compliant header files for backup. I have started the ramp-up on Java by re-visiting Eckel's book. I continue to search for a Java training course.
- Now that summer shutdown is over we'll need another software meeting to talk, in detail, about the NDGI (the NEWFIRM DRAMA/GWC interface).

Shelby Gott

- Revised the CassIAS GUI to display probe positions in arcseconds, and focus in microns, instead of motor steps. Also rotated the probe x-y position display to match the guide camera orientation. This all needs testing, and the holes in the mirrors need to be measured.
- Installed a bug fix in the CassIAS/WUFF motor control software. This also needs testing sometime when the system is powered up.
- Evaluated a sample of an ethernet serial server called "Vlinx". It works about the same as a Newport iServer.
- Did a little more work on the 2-meter guider upgrade, by sketching a design for the third circuit board. This board will replace the A5 "interface" board that operates the main mirror, ND filters, etc.
• Began work on an "engineering console" interface for MONSOON.

Bob Marshall

• Projects:
  o Worked with 'obsinit' on "tan" at the 4-meter. Tested it during the MOSAIC checkout. There are several setup choices that need to be made before releasing the "tan" version is ready for use. Cleaned up files on the data disks (/md3, /md4, /md5).
  o Tested the "claret" Web documents on the new linux system "rose". Most files are OK, some effort will be needed to get "cgi-bin" and "Includes" files to work.
  o MONSOON: Setup the MONSOON dual-boot system "lechat" to boot Linux by default. Helped Nick Buchholz with CVS repository reorganization.

• Operations:
  o Cleaned up the disk space on "claret" to create more space for Web documents.
  o Installed new versions of 'ftp' (security updates) on Mountain Linux systems.
  o Buell Jannuzi asked if we could setup the 4-meter printer so that observers could easily connect to it using laptops.
  o After Jim Hutchinson swapped the 4-meter and Coude Feed printers I setup the printer software, and wrote a document explaining how to connect to the printer.
  o Worked on automatic startup of VNC on teal. Had problems with the startup script provided in the VNC release.
  o Installed SSH V2 on "navajo" at WIYN.
  o Updated the mountain root password.

• Maintenance:
  o 4-meter: MOSAIC downloading problems.
  o 2.1-meter: dewpoint sensor.

• Other:
  o Finished the software setup on my new desktop Linux system.
  o Updated Windows 2000 on my laptop and installed Norton antivirus software. Did an inventory of the group's Windows systems to ensure that the security related updates and antivirus software are installed.

Dave Mills

• Continued working on the mountain databases project. Tables include Telescope position, configuration, environment, 4maps, guider data and so on.
• Spent some time checking out systems after shutdown. Added new proximity switch detection for 4m-wavefront camera.
• Processed data from last mosaic-autofocus test run in prep. For next run (mosaic problems postponed it).

Peter Ruckle

• The GNIRS AT was mostly successful with only a few minor software issues. In the next two weeks that the instrument is disassembled, the software issues will be addressed and fixed. These include changing the detector temperature control to an omega controller. A prototype for this is in the WFS code. Once that code is up and running, it will be trivial to adapt it the DC. Another issue came up of losing frames. To test this I will be analyzing the bus traffic to make sure that there are no timing issues or missed interrupts.
• In whatever free time beyond this I will be working on the PHOENIX SOAR interface. I believe I have to the beginning of the year for this so I am not too concerned yet.
Risk Management (C. Gessner)

- No OSHA reportable injuries were reported this month.

**Items accomplished this month:**

- Modified and programmed the exterior back door of La Quinta and the interior lobby doors so the doors will not unlatch when approached from the interior.

- Continued to provide assistance during the Mayall 4M shutdown with the major work being completed on August 12. I am pleased to say that there were no reported injuries or property damage due to the work.

- Provided assistance during the 2.1 M shutdown by advising the project leadership on site access, lockout tagout, fall protection, personal protective equipment, ladder safety, platforms, confined space, communications, industrial hygiene, environmental compliance and others.

- Participated with the team that cleaned the Mayall 4M telescope during August 20 and 21 and provided safety advisement related to ladder safety, fall protection and hand protection.

- The Optics and Instrument shop elevators project continues. Met with Thomas Woodrow, State Elevator Inspector, on August 26. We discussed options that may solve our compliance issues.

- Related to the above John Dunlop, Jeff Barr and I have been discussing elevator possibilities and accessibility issues for the Tucson facility. We all agree that the layout of the facility is not conducive to good circulation and accessibility and are proposing three possibilities to the organization for consideration.

- Attended the first quarterly meeting of “Tucson Together for Safety Joint Alliance” on August 19. There were over 75 attendees representing some of the following organizations: City of Tucson, ASSE, Pima County Risk Management, Bombardier, MSA, SCF of Arizona, ABA, TACE, Southwest Gas, ADOSH, Department of Homeland Security, SAHBA, Cochise County Risk Management, TEP, Pima County NRPr, ETC, and Rincon Safety. The purpose of these quarterly meetings is to provide a forum for networking and sharing ideas. On the months of the quarterly meetings, the Southern Arizona Chapter of ASSE decided not to hold its monthly meeting and attend the Joint Alliance meeting.

- Participated in a meeting between Tohono O’odham officials and KPNO management in Sells on August 6. The main topic of discussion was the VERITAS project. We had hoped that there would be an opportunity to discuss other current issues related to the relationship between the Tohono O’odham Nation and Kitt Peak.

- Assisted STScI’s Ms. Gene Bryant with the classification and reporting requirements of an industrial injury that occurred at their Maryland facility on August 1.

- Consulted and worked on a number of risk management issues including key cards, workers compensation, WIYN industrial hygiene, safety shoe policy, standards related to fall protection in lifts, safety glasses, fire protection inspection contract, repair and recertification of fall protection, environmental compliance for the shutdown, drivers safety, MSDS management, youth worker restaurant safety and modifications to the business contingency plan.