RECENT TECHNICAL ACTIVITIES

The Data Reduction Facility

A number of new developments have occurred at the D.R.F. since the last bulletin. Among the recent acquisitions are a new computer, the addition of cluster software, a complete Ethernet/DECnet network, an office terminal server network, a connection to the UUCP electronic mail network, the addition of TEX/LATEX software, and the addition of a laser plotter.

The New Microvax: The C.F.H.T. Data Reduction Facility has been recently expanded with the addition of a MicroVAX from Digital Equipment Corporation. The cpu capacity has grown by a factor of 2.5 with the addition of the MicroVAX. The VAX 750 has the equivalent cpu power of 0.6 VAX 780's, while the MicroVAX corresponds to 0.9 VAX 780's, for a total cpu power of 1.5 VAX 780's. The MicroVAX has twice the physical memory (16 Mbytes) of a Vax 750 (8 Mbytes).

The New Cluster: This new computer and the existing VAX 750 have been incorporated into a VAX Cluster using the SILINK technology from System Industries. Incorporating the two cpus into a cluster allows both computer systems to share such expensive peripherals as the discs, line printers and laser printers as well as "rare" peripherals such as modems. The cluster software allocates these resources and takes care of the housekeeping chores such as ensuring that two people do not write to the same file at the same time. The only large peripherals which can not be shared are the magnetic tape drives.

The SILINK software allows the two large Fujitsu Super Eagles to be shared amongst the DEC cpus. To the user this relieves most of the problems of multi-cpu installations; the prime problem is to remember which cpu and which disc you are currently logged into.

The New Terminal Server Network: The cluster is tied together by an Ethernet trunk throughout the entire building on which we are running DECnet. All the offices are being wired for terminal servers and, once this project is completed, users will be able to select which cpu they wish to log into from a menu at their terminal. We have also had success connecting non-DEC cpus and devices to the terminal servers so that now the Hewlett Packard 1000s, some of the Hewlett Packard Vectras, and some modems are accessible to any terminal on the terminal-server network.

The UUCP Network: We are now an official UUCP (Unix-to-Unix-Copy-Program) electronic mail site. We receive mail courtesy of UH Manoa on Oahu and will in the near future probably host some of the on-island future sites. Our e-mail address differs depending on the sophistication of your local e-mail routing scheme. For those sites without "domain routing" capabilities you need a means of getting mail to N.O.A.O. in Arizona. Our address is then

. . .!noao!uhmanoa!cfhtvax!username

where '...' is whatever route you must take to get to noao (ask your local UUCP expert) and 'username' is the name of the person at CFHT you would like to send mail to. If you do not know the local account name of the person just substitute 'system' for 'username' and we will forward your mail to the correct party. If your site can handle domain routing, or if your site is not on UUCP then our address would be

username@cfhtvax.MKO.HAWAII.EDU.UUCP

This address might have to be preceded by a string; again consult with your local e–mail expert.

We have found typical transfer times (to send and receive a reply) of 1-2 days for sites as far as Space Telescope Science Institute and 2-3 days for sites in France. The mail network supports both electronic mail and file transfer. For further information please send e–mail to 'system@cfhtvax' or by "snail" mail to our postal address.

The TEX/LATEX Software: In an effort to provide high quality, publishable documents and tables the D.R.F. has added the well-known TEX/LATEX package. This package has a terminal previewer so that documents may be previewed and corrected before the final draft is plotted on the laser printer. We have also acquired a version which runs on a Personal Computer.

The Laser Plotting Facility: Our existing plot capabilities have been augmented by the purchase of a Laser plotter (Lasergrafix 800) from Quality Micro Systems. This plotter has been integrated into our commercial plotting facility (the DISSPLA package from ISSCO) and the IRAF package. It is capable of plotting full page graphics at about 8 pages per minute and has a resolution of 300 dots per inch.

R. McGonegal

Base Extension

After six months of design and planning, and a further semester of noise, dust and anticipation, the staff was able in the last days of January to move into 470 new usable square meters added to the Waimea headquarters' main building. The permanent facility completed in 1982 had been somewhat scaled down from the original plan, and it was fully utilized from the first day. The need for an eventual "phase 2" was already evident then, and had been taken into account in the design.

The 50% area expansion, and minor modifications in the existing structure, were undertaken to cover the following needs:

- a new library (at 103 m^2 the largest room in the building) to house continuously expanding holdings and the Palomar Sky Survey;

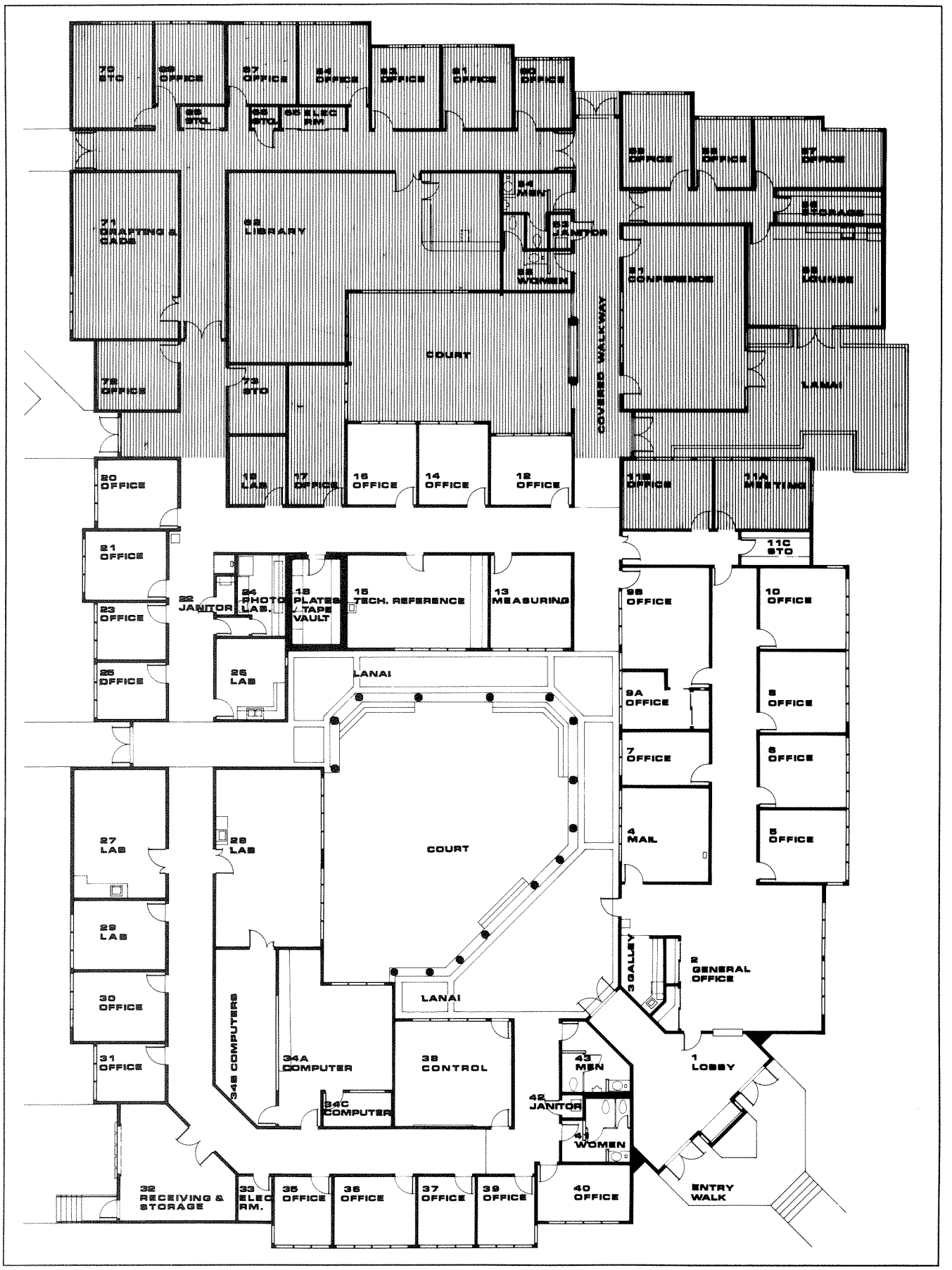

Figure 9: Floor Plan for the CFHT Base Facility in Waimea. The new extension area is shaded in this drawing.

- additional labs for optical and electronic instrumentation, and for computer–aided design;
- a technical reference room, to regroup now widely dispersed documentation;
- offices for the two additional resident astronomers, for longer–term visiting scientists and for guest observers;
- a conference room suitable for staff meetings and lectures;
- a lounge.

At the same time the adjacent industrial building was enlarged by one–third, in order to accommodate a general maintenance shop and to provide much-needed storage space.

An important design objective was to preserve the unity of the entire facility. This was achieved by retaining, to the fullest extent possible, the standards and materials selected for the first phase. Indeed, after just a few months of use, it would be difficult for the uninformed eye to distinguish the new from the old. As for the lengthened walking distances, they have done nothing to dilute the staff interactions that the original layout so efficiently fostered.

C. Berthoud

Transmission par Micro-Ondes Entre L'Observatoire et Waimea

En décembre 1986 le conseil d'administration du TCFH approuvait l'implantation immédiate d'une liaison temporaire par micro-onde entre le sommet du Mauna Kea et Waimea. Une telle liaison était jugée essentielle pour le soutien aux observateurs pendant leurs missions et pour les travaux techniques de l'équipe CFH. Au cours du premier trimestre tous les détails pratiques ont été réglés visant à une installation et une mise en service pour le mois de juillet.

Contrairement à l'entente établie en janvier 87, l'Institut d'Astronomie de l'Université d'Hawaii signifiait son opposition au projet en avril 87, interdisant l'installation de l'émetteur-récepteur sur le batiment TCFH et recommendant de chercher d'autres modes de transmission entre le sommet et Waimea. Le projet est donc retardé de plusieurs mois. D'autres solutions sont donc à l'étude, plus onéreuses, mais faisables en collaboration avec l'observatoire Keck.

G. Lelièvre

Modifications to the Telescope Hydraulic System

Investigations using an Infrared camera and direct thermal measurements have shown that the telescope hydraulic system is one of the major heat sources in the dome. The telescope hydraulic fluid supports the telescope on its hydrostatic bearings. The fluid dissipates over 10 kw of heat to the air within the dome. This hot air can rise through the light column, thus decreasing the image quality.

A project to chill the fluid and maintain it at near 0 C is now nearing completion. The normal night-time temperature of the fluid is recorded by a thermal data logger now in full-time operation in the Observatory. The temperature of the fluid rises during the night to approximately 43 C, heating the horseshoe structure in the process.

The project involves changing the present hydraulic fluid to one which has approximately the same viscosity at 0 C as the present one has at 30 C. This new hydraulic fluid is a synthetic and is currently used by the military.

The hydraulic fluid will be cooled by using the glycol chiller system which cools the observation level floor. Cooling the floor requires approximately half the chiller system's capacity in the summer during the day. Chilling the hydraulic fluid will also require about half the system's capacity, except that this load will normally occur during the night when the floor is not loading the system to as great a degree.

The operating temperature range of the new fluid would be between 0 and 40 C as compared to the present fluid, which operates between 25 and 70 C. However, rather than allowing the new fluid to gradually rise in temperature during the night, it will be held at a constant temperature.

The physical modifications to the hydraulic system, including installation of the chiller, were completed earlier this year by a contractor. The existing fluid, which is still being used to support the telescope during its regular operations, is in a temporary reservoir, and the existing reservoir is being cleaned in preparation for installation of the new fluid. The hydraulic pump seals and system filters have all been changed and some worn parts have been replaced in preparation for testing the new fluid in the hydraulic system.

Three nights were scheduled in May for the first tests of the fluid supporting the telescope. The hydraulic system modifications are expected to be fully implemented by mid-June. From that time on, the telescope will be supported by fluid which is very nearly at the outside air temperature, taking us one step closer to the best imaging possible on Mauna Kea.

D. Cowley