

ADVISORY COMMITTEE OF CERN USERS (ACCU)Minutes of the fourth meeting, held on January 29, 1979

- Present : M. Baldo-Ceolin, F. Binon, W. Blair, K. Böckmann, M. Buhler-Broglin, M. Crozon, T. Ekelöf, W. Geist, J.D. Hansen, D. Imrie, E. Lillestøl (Chairman), U. Meyer-Berkhout, M. Regler, W. Scott, L. Tauscher, W. Tejessy, G. Ullmann, L. Van Hove.
- Invited : H. Laporte (Item 4), M. Metcalf (Item 3), R.N. Milligan (Items 3 and 6), R. Samuel (Item 4), D.O. Williams (Item 5)
- Apologies for absence : P. Borgeaud, I. Duerdoth, D. Schotanus, A. Vitale

The Chairman said that Jensen was no longer involved in experiments at CERN, having left for the United States, and introduced Hansen who had been appointed as member representing Denmark.

1. Adoption of agenda

The draft agenda was approved.

2. Minutes of the previous meeting (CERN/ACCU/3)

The minutes of the previous meeting, held on October 2, 1978, were approved, with the following addition under 7. (see also later):-

"Böckmann queried the arrangements for vending machines in experimental areas, and asked for further information".

3. Matters arising from the minutes

a) Coordination of software support for counter experiments

Metcalf reported on progress in implementing the four recommendations made at the previous meeting.

i) and ii) had been discussed with Lohrmann, in DD Division, and in COCOTIME, with the result that the following questions have been added to the form to be completed when a group makes its initial proposal for computer time:-

- a) who is the person in charge of software coordination in the collaboration?
- b) is any consultancy assistance from CERN required?

If the answer to b) is positive, the request is channelled to the appropriate DD group leader (H. Grote) to arrange for the necessary support as far as possible, within the limits of available manpower.

iii) a first draft was currently under discussion by himself and Regler, before being discussed further by the CUAC software sub-committee.

iv) this request had been transmitted to the Chairman of the Academic Training Committee, for action during the next academic year.

b) Short-term accommodation of Users at CERN - Hostels

Milligan said that action had been taken on several points concerning the barracks, and that as a report had been circulated with the agenda (see Annex I), he would not go into details. On the question of the provision of telephones in the rooms of the CERN Hostel, he reported that six rooms were equipped with jacks, and that it was not economically feasible to extend this facility. Anyone wanting a room with a telephone should make this clear at the time of reservation, and if possible would be given one of the six rooms indicated.

Regler said that most people to whom he had spoken were now satisfied with the accommodation arrangements for short-term users. The only problem he was aware of was of noise at the St. Genis Hostel - noise caused by cooling plant at CERN.

c) On-site transport for short-term visitors

Buhler-Broglin announced that a scheme for hiring cars for visiting teams had just been approved, after lengthy discussions. CERN will rent cars from Renault on a three year lease, for sub-rent to visiting groups on the following conditions:-

- i) minimum rental period one month.
- ii) cost 12 SF per day, covering everything except petrol - insurance cover (franchise 500.-) and maintenance included - on the basis of not more than 1000 Kms. per month.
- iii) the car to be used only for journeys on and between the sites, and (provided the home institute agreed) to the airport, railway station, and homes (Geneva area) of users.
- iv) Petrol to be bought outside CERN, by the user.
- v) rental subject to the approval of home institute, with one named responsible person for each group.

He added that the scheme was just starting, and that a memorandum would shortly be sent to all concerned, including all ACCU members.

Imrie and Regler expressed satisfaction with the new arrangements, and asked what could be done for visits of less than one month. Van Hove pointed out that the present scheme was the result of long negotiations, and asked that groups and institutes make the effort to use it in its present form, perhaps with some sharing of cars/costs, and suggested that the scheme be reviewed in one year's time. Buhler-Broglin added that the number of cars involved was not pre-determined, but depended on requests, and urged members to take this further with their colleagues and institutes.

Meyer-Berkhout asked whether someone not 100% at CERN (e.g. visiting for two weeks every month) could be given permission to drive CERN cars. Blair said that this was possible.

Laporte reported on the navette, saying that the request for a scheduled stop at the Main Building, with waiting period, had been met, the waiting period being five minutes. Blair added that a clock would be installed there, and asked members to comment on the change at a future meeting.

Regler pointed out that the telephone number of the radio-navette did not appear in the CERN Telephone Directory, and Milligan promised that this would be rectified with the next issue of the Analytic Directory.

d) On-site meal and lounge facilities

The Chairman said that all the letters which he had received on this subject had asked for the solution which had been introduced, i.e. to open Restaurant No. 1 and its lounge at weekends.

Milligan referred to the report circulated with the agenda (see Annex I) and said that Restaurant No. 3 now offered an evening service which was little used. Clients were mostly contractors' employers, not persons represented by ACCU. It was difficult to envisage a weekend service unless there was a major increase in numbers. Ekelöf observed that numbers should increase after the present long accelerator shutdown. Milligan reported that the proposal to introduce automatic meal vending machines had been rejected by EP Division.

Imrie expressed satisfaction with the new arrangements at Restaurant No. 1, and said that the changes had been widely welcomed. He asked whether the weekend opening hours of 8 a.m. to 8 p.m. could be extended to 10 p.m. Milligan said that the present arrangements had caused staffing problems for the restaurant management, which had not been easy to resolve. Limited facilities were offered to persons arriving after 8 p.m. by the vending machines available at the CERN Hostel.

Milligan distributed a list of the automatic vending machines currently installed (Annex II) and added that it was planned to instal one machine (plus a money-changing machine) at the barracks, and two on the Preveessin site (in EHN 1 and EHN 2).

e) CERN budget for visitors

Van Hove said that the internal breakdown of the official budget for 1979 for Fellows, Associates, and Students had been agreed as follows. The number of Fellows was unchanged, and the central budgets for Member State and Non-Member State Scientific Associates had been confirmed at essentially the same level as actual expenditure in 1978. There had been cuts in the applied field (Associates and Summer Students in the accelerator and service divisions), but the changes necessary to remain at the official budget figure of 19.1 MSF should have a minimal effect on the physics research programme.

f) Call service when ISR down

Van Hove said that now when the ISR was down for a significant period, one phone number per intersection could be left with the control room to enable the team to be recalled when stable operation resumed. Geist added that this had been introduced before the shutdown, and appeared to work well.

4. CERN workshops - facilities and costs

Samuel presented a report on the facilities available and costs for the CERN Central Workshops, SB Division. The presentation was based on three reports:-

- i) CERN Central Workshops (SB/AC/A/019/ gp of 25.1.79)
 - ii) Explanatory notes on invoicing of Central Workshops Services (Annex to i))
 - iii) Technical Facilities Index w Workshops (green report dated April 1978)
- (i) and ii) form Annex III of the minutes, and iii), attached, is not reprinted but forms an integral part of the present minutes).

Concerning facilities, Samuel drew the attention of members and of visiting teams in general to:-

- a) the comprehensive range of mechanical engineering and metal-working services available
- b) the possibility of obtaining advice on placing work outside CERN
- c) the free-access workshops (with supervision)
- d) the availability of specialists to advise on technical problems

As far as costs were concerned, the system used was as follows. An hourly rate (35 Swiss francs for basic services, 61 Swiss francs for large machines/special techniques) is charged for Central Workshops services, and recovered from the budget of the user group. This charge is intended to make the user discriminate between what is and is not important, and, while not directly related to real costs, compares reasonably well with rates applied by outside engineering firms.

Buhler-Broglin added that there were also free-access workshops available to users in EP and SPS Divisions, but that these were not supervised. All work done for EP (including user groups) was coordinated by a central technical office in EP Division (W. Albrecht, Building 26).

Laporte drew attention to Tables I and II of ii), giving hours of work invoiced in the Central Workshops in recent years, and a breakdown for visitors' usage in 1978. He explained that the total number of hours had decreased due to staff reductions. Regler said that a similar breakdown for work done outside CERN would be useful, but accepted that this was not readily available. Buhler-Broglin commented that there was a tendency for user groups to do simple work at their home institutes, and to have specialised work done at CERN, and Imrie supported this observation as a good approach to preparing equipment for CERN experiments. Samuel closed the discussion by observing that over the past five years there had been a major effort to build up the specialised equipment and services available in the Central Workshops.

5. Small Computers at CERN - present and future

Williams (Online Computing Support (OC) Group, DD Division) reported on online computing support at CERN (see Annex IV, which is an updated version of the text distributed at the meeting). There were at present about 100 small computers on site associated with physics experiments, and this number was rapidly increasing. The basic policy was to offer support for standard hardware and for standard software to provide a framework for the physics group to build on. Physics groups were at liberty to choose other solutions, but then could expect no support from CERN.

Standard hardware assumed interfacing via CAMAC, and the use, for historical reasons, of three ranges of machines (Hewlett Packard 2100 and 21MX, NORD-10, -50, -500, Digital PDP-11/VAX-11). However Hewlett Packard equipment would not be supported in new experiments, although support would be available for some years for existing equipment. Not all configurations could be supported. In setting up future experiments the NORD and Digital ranges should thus be used, and the configuration discussed with OC Group to ensure support. Standard software meant that on supported hardware configurations DD ensures that the basic facilities function. It was then up to the physics group to test and monitor their data.

Access to the services indicated should be discussed with the OC Group member responsible for such requests (P. Scharff-Hansen for 1979). If significant expenditure by CERN was involved, this should be discussed with the EP Division Leader. It was planned during 1979 to start operating online minicomputers as a pool service (i.e. short/long-term loans like the EP electronics pool), and further details would be given later.

There could be problems in the interface between physics groups and manufacturers, due to DD staff shortages, and the position was under review. For technical reasons, NORD could generally be called directly by the user, Digital and Hewlett-Packard only after consultation with OC Group. When a new installation was accepted for support, a member of the OC Group would be nominated as contact (but not available full-time due to other commitments). The physics group would be expected to nominate one person to represent the experiment, and should assist in trouble shooting by keeping an up-to-date logbook of all problems, changes etc. in the computer area.

Williams closed by saying that to ensure information flow to users on policies and developments in future, a CERN Online Computing Newsletter was being introduced, his present report being a draft for the first issue. This would be sent to all on the present Computing Newsletter mailing list, to all physics groups active at CERN, and to ACCU members.

Williams then answered a number of questions on points of detail, and agreed to report back to ACCU in a year's time.

6. Schooling in the Geneva area for the children of users - possibilities and costs

Milligan gave the following general information, and indicated how to obtain more specific information for individual questions.

Children living in Switzerland can attend normal state schools where tuition is free. In some cases the schools make special arrangements to help children with French-language difficulties.

There are private fee-paying schools in Geneva, teaching in English, German and Swedish at primary and secondary levels.

In France, the Lycée at Ferney-Voltaire has been made into an international lycée where there is a common core of teaching in French and national programmes for Swedish, British, German, Austrian, Dutch, Belgian and Italian Children. Tuition is generally free, except for the British and Swedish programmes which are funded by the parents. There is an associated scheme for children attending primary schools in the surrounding area of France. Children of CERN parents living in Switzerland can also participate in the French arrangements.

The CERN Staff Rules provide for the reimbursement of a certain proportion of school fees for Staff Members, Fellows and Paid Associates. Unpaid Associates do not qualify for this reimbursement, on the assumption that their employers make adequate provision for these expenses. Some private schools, and the British programme at the Ferney-Voltaire Lycée, apply a cheaper scale of fees to persons who do not qualify for reimbursement.

The Social Work Section at CERN, telephone 2486, can provide detailed information on the possibilities available for the various nationalities and ages of children involved, and the formalities required.

Lillestøl added that the ECFA report on the financial conditions of users gave information on the reimbursement of school fees to users by member state as follows - British users 100%, Swedish users 90% (of the cost of the Swedish school), Austrian and German users no reimbursement. No information was given in the report for the other member states. He observed that for financial (and other) reasons schooling problems varied according to country of origin, and concluded that the matter could not be taken further by ACCU, but should be raised in the home country by the users concerned. This was agreed.

7. Other business

a) ACCU Procedure

The Chairman said that several members had replied to his letter asking for comments on ACCU procedure, and that there was unanimous support for the present procedure, i.e. members should raise matters for the agenda in writing to the Chairman between meetings, or, if this was not possible, at the meeting itself. Each new item would be reported on and/or discussed at one meeting, and members had the opportunity at the following meeting to ask further questions on that item, before the matter was closed. Ekelöf commented that raising problems verbally at the meeting was a useful way of establishing whether or not a problem was real. It was agreed that the procedure outlined above was appropriate.

b) Urgent access to stores in the evening

Regler said that there appeared to be a problem in getting urgent access to stores in the evening. Buhler-Broglin said that this should not be the case, and indicated that the procedure for such cases was outlined in Annex III of the minutes of the meeting of May 8, 1978, and added that he would ensure that the Users Guide also included a suitable text. Anyone who had experienced difficulty with this procedure should see I. Pizer, EP Division.

c) User representation in the CERN Staff Association

Tejessy drew the attention of members to the fact that all users registered as Unpaid Associate at CERN are automatically members of the CERN Staff Association. For some years users have not been represented on the CERN Staff Council since no one has been prepared to stand for election. He wished to inform members of this situation, and asked that anyone interested in further information should contact him.

8. Items for the agenda of the next meeting

- a) Ekelöf raised the question of SPS scheduling, and said that this was at present established about one month in advance, which gave problems to users, especially if they had teaching commitments. Regler agreed, and added that it would be reasonable to establish the schedule half an academic year in advance. It was agreed that the agenda should include "Accelerator Scheduling" (M.C. Crowley-Milling and the SPS Coordinator to be asked to report).
- b) Geist said that when equipment such as old computers, scanning tables etc. was no longer needed at a given institute this could often be of interest to another institute and proposed a discussion on the availability of such equipment. This was agreed.
- c) Crozon asked for a report giving general information on the CERN Fellows and Associates Programme. Blair agreed to report.

9. Next meeting

The next meeting of ACCU will be held on Monday, May 28, 1979 at 14.30 in the Conference Room, 6th floor, Main Building.

ACCOMMODATION & RESTAURANT FACILITIES FOR CERN USERSNote for ACCU members

At meetings of the Advisory Committee of CERN Users, a number of comments have been made concerning facilities provided for scientists coming to work at CERN for short periods from institutes in the member states. Various actions have been taken in the light of these comments, and the present paper provides a brief statement of the current facilities and the improvements that have been made.

Restaurants

Owing to various shortcomings in the week-end service at Restaurant No. 2, arrangements have been made, with effect from the beginning of December 1978, for this service to be transferred to Restaurant No 1, where the opening hours are from 8.00 a.m. to 8.00 p.m. on Saturday and Sunday.

At the Preveessin site, the provision of evening and week-end meals is progressing with an evening meal service available from Monday to Friday since 16th October. The possibility of providing meals from self-service automats is also being explored. The general shortcomings at Restaurant No. 3 should be overcome if the proposed extension is approved and implemented in 1979.

Lounge Facilities

The need for a lounge area where occupants of the CERN Hostel and barracks can relax at week-ends has been met by arranging for part of the cafeteria area of Restaurant No. 1 to be left open at all times. The bar and technical installations are separated by means of the sliding doors that were installed earlier this year. The library is, of course, also available to visitors at all times, and a few weekly newspapers and magazines are supplied.

CERN Hostel

47 single rooms and 7 double rooms are provided on the fourth and fifth floors of Building 5. The occupation rate in 1978 has been 80% on average, including week-ends. Automats are available on the ground floor for the provision of hot drinks, bottles and snacks, and there is a stand-up area where they can be consumed. The standard of accommodation is such that clients are generally fully satisfied.

CERN Barracks

The barracks are operated as an annex to the CERN Hostel, and offer the following accommodation: 18 single rooms, 4 double rooms and 14 triple rooms. Various minor defects that were reported by occupants are now being rectified, and arrangements have been made for a regular examination to take place to ensure that the standards of accommodation there are maintained. An automat service for drinks and laundry facilities are available in an adjacent building.

Saint Genis Hostel

At the St. Genis Hostel, which is operated by the French authorities, CERN has priority in the reservation of 79 single rooms. Earlier this year various improvements were made to these rooms to bring them up to a standard comparable

to the CERN Hostel. Arrangements operate satisfactorily for reservations to be made via the CERN Hostel Receptionist and, with the collaboration of SB and HS Divisions, transport facilities are offered to and from the Meyrin and Preveessin sites for persons running experiments, etc.

Personnel Division
Tel. 3207

Situation au 27.11.78 des automats à boissons et nourriture
sur le site de Meyrin

Emplacement		Nombre	Nature	Exploitation	Propriété
Bâtiment	Etage				
4	2	1	Bouteilles	Coop	CERN
5	s.sol	3	Bouteilles Confiserie Boissons chaudes & froides	Coop Coop Kwik Kafé	CERN CERN Kwik Kafé
6	1	2	Bouteilles Confiserie	Coop Coop	CERN CERN
13	rez	1	Boissons chaudes & froides	Kwik Kafé	Kwik Kafé
19	1	1	Boissons chaudes & froides	Kwik Kafé	Kwik Kafé
23	1	1	Boissons chaudes & froides	Kwik Kafé	Kwik Kafé
37	rez	2	Bouteilles Boissons chaudes & froides	Coop Coop	CERN CERN
57	1	1	Boissons chaudes & froides	Kwik Kafé	Kwik Kafé
502	rez	2	Bouteilles Boissons chaudes & froides	Coop Coop	CERN CERN
513	s.sol	1	Boissons chaudes & froides	Tortella	CERN
582	rez	2	Bouteilles Boissons chaudes & froides	Tortella Kwik Kafé	CERN Kwik Kafé
589	rez	2	Bouteilles Boissons chaudes & froides	Coop Coop	CERN CERN

TOTAUX	11	<u>Appareils exploitation Coop, propriété CERN</u> dont
	6	Bouteilles
	3	Boissons chaudes & froides
	2	Confiserie
	6	<u>Appareils exploitation & propriété Kwik Kafé</u> dont
	6	Boissons chaudes & froides
	2	<u>Appareils exploitation Tortella, propriété CERN</u> dont
	1	Bouteilles
	1	Boissons chaudes & froides
	19	<u>Appareils sur le site de Meyrin</u> dont
	7	Bouteilles
	10	Boissons chaudes & froides
	2	Confiserie

CERN CENTRAL WORKSHOPS

GENERAL :

CERN Workshops and technical services are primarily support units catering for maintenance, urgent interventions or fabrication of prototypes or experimental equipment when the close cooperation of project engineer, designer and workshop is essential.

The Central Workshops of SB Division provide a general service to all CERN users and, for that reason, re-group a variety of fabrication techniques operated by specialised staff (about 190).

FACILITIES AND SERVICES AVAILABLE

Since a classified list of the equipment and facilities available can be found in the "Technical Facilities Index (W) Workshops" - CERN - April 1978, only the main headings will be mentioned here.

The following symbols are used :

(ME) Section Code for internal use.

{SBME} Code reference in Technical Facilities Index.

(F) Fitters/craftsmen can be loaned to CERN users.

Invoicing applies.

i/ Mechanical Eng. Section (ME) {SBME} (F)

This workshop is equipped with the largest machine-tools available at CERN.

Turning, milling, Jig-boring, grinding - NC machines.

ii/ Sheet Metal Working and Welding Section (TO) {SBWE} (F)

Bending, forming, drawing - Fusion welding including all types of Arc welding techniques, plasma and Electron-beam welding.

- iii/ Special Techniques and Mechanical Support Section (ST) {SBSP and SBMS}
- Ultrasound techniques, Electro-erosion, Grinding hard materials, fabrication from synthetic resins, Cerenkov mirrors, Chemical and metallurgical laboratory facilities.
- Plasma torch sprayed coatings, thin film techniques (evaporation, sputtering).
- iv/ Detectors Section (DE) {SBDE}
- Fabrication of light-guide/scintillator assemblies.
- v/ Heat-treatment Section (TT) {SBHT}
- Conventional heat-treatments, hardening, annealing, carburising, nitriding.
- Vacuum heat-treatments, degassing, vacuum brazing.
- vi/ Surface Treatments (TS) {SBST}
- Degreasing, chemical cleaning, anodising, polishing, electropolishing, chemical and electrolytic plating.
- vii/ Printed Circuit Boards Section (CI) {SBPC}
- Fabrication of Printed Circuit Boards (prototypes).
- Photographic techniques, Photoengraving and chemical machining techniques.
- viii/ Quality Control Section (CQ) {SBQC}
- Inspection of materials, Metallurgical facilities, Mechanical testing. Non-destructive testing, Spectrographic, chromatographic analysis. (solids, gases).
- Dimensional inspection, roughness measurements, magnetic permeability tests.
- ix/ Subcontracting Section (OR)
- Advice to users on firms and facilities outside CERN.
- Enquiries and placing of orders to subcontractors.
- Follow-up of job.
- only amount invoiced by external firm

x/ Free-access Workshops (AL) (F)

Two "Free-access Workshops" (Ateliers Libres) are available to users, (CERN staff or Visitors). One is located in the West Area (B.180), the other, and larger one, in Adams' Hall (B. 155).

These areas are equipped with a comprehensive range of machine-tools and fabrication equipment which is freely accessible to qualified personnel. The Central Workshops provide supervision for these areas, advise on utilisation of equipment, safety regulations, supply of tools, etc... In some cases, by arrangement with the supervisor, qualified Central Workshops personnel may be available for short-term interventions. Several other smaller workshops of this type managed by the host Divisions are also available. Visitors are invited to make full use of these facilities.

xi/ Other Services

Due to the variety of techniques in use at CERN, there is a small number of specialised engineers, scientists and designers among the staff of the Central Workshops. They are, at all times, available for discussion or advice, without any commitment for the user.

(See Telephone Directory "Analytical" - p. 33).

INVOICING OF CENTRAL WORKSHOPS SERVICES

Since 1964 a policy decision of the Organisation has made it necessary for the Central Workshops to apply a system of invoicing for the services (see explanatory notes in Annexe).

Every year basic hourly rates are fixed in line with current trends in industry.

Where a job is proposed to the Workshops, an estimate is established based on the number of hours required in relation to the equipment available. This estimate is then submitted to the user as a firm quotation. Work will proceed upon return of the Job request form (Demande de Travaux Ateliers) signed by an authorised person.

Unless major modifications are requested by the user at a later stage, the amount invoiced will be the price quoted initially. Thus, the workshops estimate represents a firm commitment to the user, whether or not the hours foreseen for fabrication have been exceeded in practice.

As a guide-line, the basic hourly rates for 1979 are :

- conventional mechanical work and loan of personnel 35.- S.F/hour.
- special machines and techniques 61.- S.F/hour.

This rate is the same as applied in 1978, when a reduction of 10 % on the 1977 rate was decided.

A survey made in 1977 has shown that these prices should normally lead to estimates in line with the average of offers from outside firms. (Whether these are obtained by the sub-contracting service of the Central Workshops or by the users themselves). However there is generally a wide variation in the prices quoted for a given job by outside firms and it follows that the "in-house" estimate by the Central Workshops can seldom be competitive when compared with the lowest bidder. As a general policy, conventional and "non-urgent" jobs should be channelled to outside firms thus allowing the Central Workshops to fulfill their proper task, i.e. to cope with the more technically demanding jobs, the urgent interventions either in the workshops or through the loan of fitters or mechanics whenever necessary.

CONCLUSIONS

CERN's policy has always been to make use of the available industrial potential in Member States to meet its main requirements in equipments. However, substantial "in-house" facilities have had to be set-up during the last 25 years and the Central Workshops represent a major part of the fabrication potential and expertise in the Organisation. It is hoped that they can be of significant help to our visiting experimental teams.

ANNEX

EXPLANATORY NOTES ON INVOICING OF CENTRAL WORKSHOPS SERVICES

1. BACKGROUND

Until January 1964, the hours available in CERN's "Central" workshops were distributed at interval to the various Divisions by decision of a "Users' Committee". In the context of a fast-expanding Organisation, this method had serious shortcomings. In the first place, Divisions whose hours quota was small exerted an undue pressure on the Workshops to increase their potential in staff and equipment whilst those with a comfortable margin used their surplus hours for the fabrication of equipments or components which might have been sub-contracted to industry.

To correct what was considered an undesirable trend, the Organisation decided to make people "pay" for the services they required from the Central Workshops. One major argument was that once a user (CERN or visitor) has to spend money for a job, he would himself discriminate between the essential and the non-essential.

2. BUDGET IMPLICATIONS

In order to implement the new "invoicing" system, the following steps were taken :

- a. The operational cost of the Central Workshops (staff plus current expenditures) was assessed and it was empirically decided that about 2/3 of the total should be recovered in the form of "invoiced" services.
- b. The sum to be invoiced was added to the budget of each user. Division pro-rata of its estimated call on workshop services during the current year, whilst the some amount was deducted from SB Division budget.

c. The ratio "Sum to be invoiced" over "number of working hours available" set the value of the nominal hourly rate in Swiss Francs.

This system is still applied in its broad lines. It means, in short, that the Central Workshops are committed to recover a major part of their operational budget by means of payments effected mainly by internal transfer of funds from CERN Divisions and, in part (less than 6 %), by payments from visiting teams or external laboratories.

3. PRESENT SITUATION

During the last few years, the trend has been to adjust the hourly rates to levels as close as possible to current prices in industry.

To that end several enquiries were undertaken in order to establish valid comparison with industrial prices practised locally and in several Member States. This led to an adjustment of workshops hourly rates, effective 1st January 1978 (In fact, a reduction of approximately 10 % on the rates fixed for 1977).

Table I shows the evolution of hourly rates since 1974. Another change was introduced on 1st January 1978. Previously, the amount invoiced to users was calculated from the number of hours actually spent on the job, the prior estimate serving only as an indication. With the present system, the estimate becomes a firm offer (forfait)

The analysis of jobs undertaken on "Visitors Accounts" is shown in Table II.

CONCLUSIONS

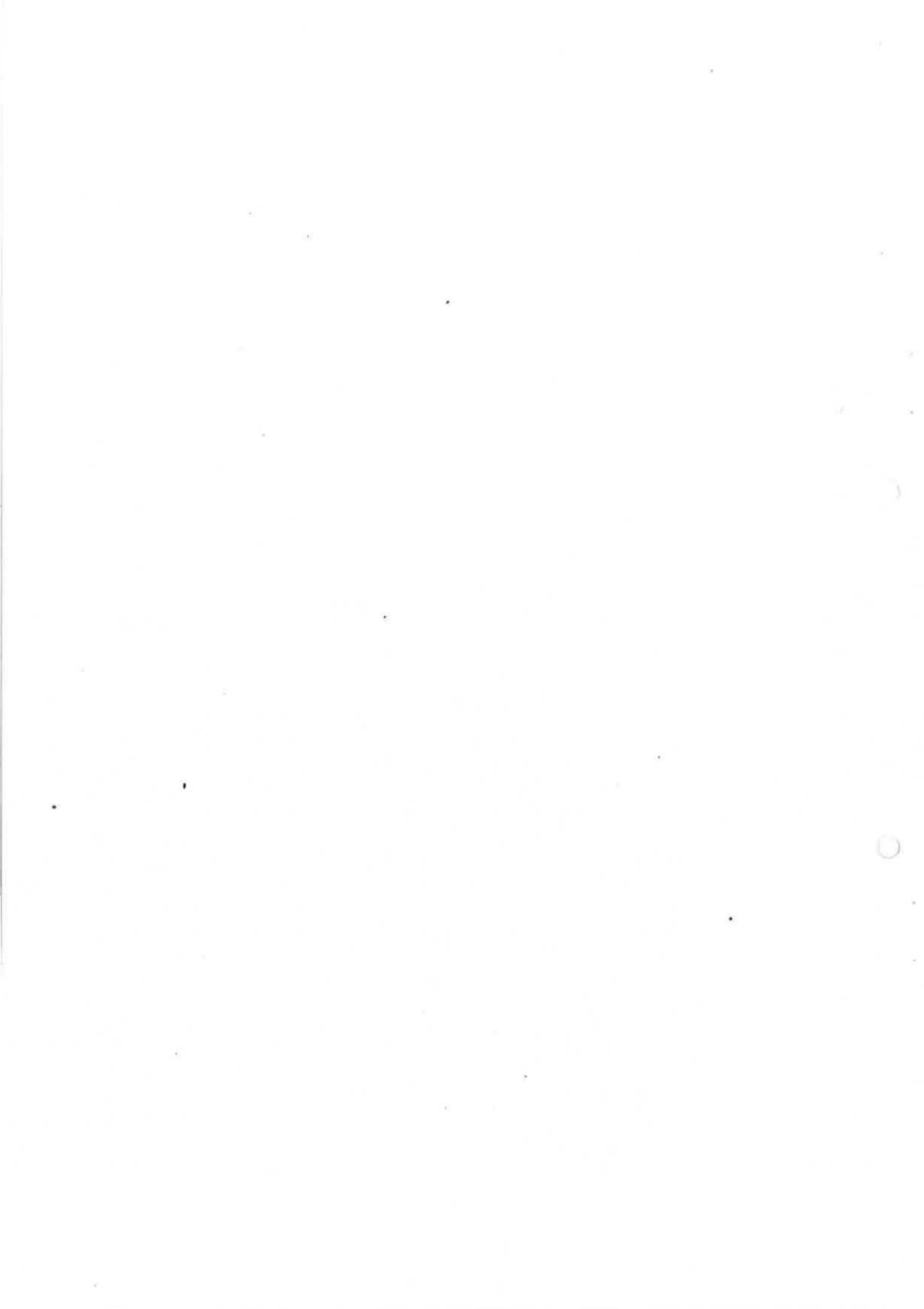
Since CERN workshops do not by definition undertake repetitive production work, their operational cost can best be compared with Development or Prototype Workshops in specialised industries, i.e. Aircraft, Nuclear, etc...

In this sense, the prices charged to users, which are not directly related to real costs, compare reasonably well with those currently applied by outside engineering firms.

Thus the method of invoicing presently in use does not "penalise" either CERN users or Visitors. On the other hand, it has never been readily accepted by the Central Workshops personnel involved.

It is hoped that the explanations given here will lead to a better understanding of the principles guiding the invoicing system and of its application in practice.

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T A B L E I

INVOICING OF CENTRAL WORKSHOPS
(Figures over the six last years)

	1974	1975	1976	1977	1978	1979
1. <u>Small machines</u> (including : surface treatments, fitters, plexiglas, quality control, etc.)						
- Hourly rate (maximum)	37.-	40.-	41.-	41.-	35.-*	35.-
- Number of hours	231'697	219'913	214'494	206'408	197'910	189'700
2. <u>Large machines and special techniques</u>						
- Hourly rate	60.-	65.-	67.-	67.-	61.-*	61.-
- Number of hours	23'875	21'740	22'493	26'127	25'730	25'600
3. <u>Total</u>						
- Hourly rate (average)	35,5	40,7	43,6	43,5	38,9	38.-
- Number of hours	255'572	241'653	236'987	232'535	223'640	215'300
of which visitors	22'150	17'380	14'880	14'570	14'190	?
Total amount (KFS) (sum subtracted from SB/AC budget that is to be charged to users- Divisions)	9'050	9'805	10'300	10'213	8'700*	8'200
of which visitors (KFS)	795	700	655	646	568**	

* Reduction decided in 1978.

T A B L E I I

**-ANALYSIS OF THE 1978 FIGURE FOR VISITORS

- Number of jobs ≈ 400
- Total amount ≈ 570 (KFS)

In subtracting one big job for Desy (Pluto chamber) and the works for ESO (Astronomy), this amount is reduced to ~400 KFS (~4,6 % of the total invoice).

The main facilities used by visitors are :

- Printed circuits ~ 120 KFS (30 %)
- Detectors (plexiglas,
wirechambers) ~ 110 KFS (27,5%)
- Special techniques ~ 100 KFS (25%)

ONLINE COMPUTING SUPPORT AT CERN

1. This article is concerned with computers that are used in physics experiments or experimental facilities for data acquisition and monitoring, and with computers used in related test environments, which can vary in complexity from simple electronics test systems up to data acquisition systems in test beams.

Historically support for this type of 'online' machine was split across divisions into at least two groups. As from 1st January 1979 all these functions have been brought together into one group, the Online Computing Support (OC) Group, in the Data Handling Division. One of the objectives of this new group is to have a written statement of their support policies that is available to all physicists using CERN facilities. It must be understood that the policies outlined here will need to be revised as we gain experience of their impacts.

2. At present OC Group is responsible for the support of about 120 computers, and this number seems to be growing rapidly. In order to support these machines with the staff available we have one key principle : we use standard hardware and standard software to provide a framework on which any physics group should be able to rapidly build the data acquisition and monitoring system that it requires for its approved experiment or test. Physics groups are of course at liberty to choose other solutions but then they can have no support from us.
3. An important aspect of standard hardware is the standard used to interface the electronics to the computer. All present support is based on CAMAC, and you should remember that the standard software packages only provide support for one or two different models of CAMAC interface on each computer system. Work is being undertaken primarily in the USA, with a view to proposing a new standard interfacing system (FASTBUS). If these ideas are accepted then we would presumably provide support for FASTBUS interfacing at some point in time. For very small test systems not being used in a data acquisition environment we may consider the use of the simpler IEEE 488 Bus (alternatively called GPIB - General Purpose Interface Bus).

However to reemphasise the point all present support is based on CAMAC interfacing and no other assumptions should be made unless a new policy is announced.

4. Another aspect of standard hardware is the computer system that may be used. For historical reasons our support covers three ranges of machines, the 2100 and 21MX Series from Hewlett Packard, the NORD-10 and NORD-50/NORD-500 from Norsk Data, and the PDP-11/VAX-11 family from Digital Equipment. However it should be noted that we are not accepting to support the Hewlett Packard machines in new experiments, although they will continue to be supported for several years in test set-ups or in existing experiments. Standard hardware means more than simply selecting a certain computer family, however. Only certain configurations will normally be acceptable for support, and in particular the magnetic tapes and disks must be selected with care. 1600 bits per inch 9-track magnetic tapes are the usual recording medium for experimental data, though we are seeing a trend towards the use of 6250 bits per inch magnetic tapes. Care must be taken with disks since software transportability and support software in general can be affected by the detailed choice.
5. Standard software means that on supported hardware configurations there is software and documentation available to explain how to input data through CAMAC, how to write that data to tape, and how to make some fraction of that data available for monitoring purposes. We also provide libraries of standard facilities such as histogramming and graphics. We look after the correct functioning of these basic features. It is always the responsibility of the physics group to write and test their own monitoring tasks, using the facilities available.
6. Before discussing in a little more detail some aspects of this support it is useful to discuss how you can gain access to the services. You must always discuss your request for support with the OC Group member who is nominated to receive all such requests. For 1979 this is P. Scharff-Hansen (tel. 4719).

In the case that your request will involve a significant expenditure by CERN you may need to discuss the financial aspect with the EP Division Leader. You should have discussed your online computing support needs with him in any case as part of the normal discussion of CERN support for proposed new experiments. You will find an 'Online Computer Request' form at the end of this Newsletter.

In principle, we will operate the online minicomputers as a pool, in much the same way as electronics are available from the EP Electronics Pool. This means that these computers and their

peripherals may be reassigned between groups, under the supervision of the EP Division Leader. This would normally happen only when the need for which the equipment had been requested had been satisfied. Details of this organisation will be fixed during 1979.

7. An important area of support concerns the interface between the physics users and the maintenance services provided by the computer or peripheral manufacturers. Three major areas seen by the user are :

- (i) re-installation of a configuration at the location of an experiment or test set-up.
- (ii) first line trouble shooting, or the diagnosis of whose equipment is at fault. This can be a very delicate and intellectually demanding activity and it is easy to waste hours or even days if mistakes are made.
- (iii) follow-up of action taken by the manufacturers' services.

The workload in this area has gone up steadily in the past few years, due to the increasing number of systems, and rapid re-allocation of test systems, with the result that the staff involved are heavily overloaded. Groups should bear this fact in mind if they experience any problems in this area. We hope to make a major review of staffing levels and organisation here as soon as possible.

The standard NORD-10 configurations consist almost entirely of Norsk Data equipment. Accordingly problems that are not due to software or to the CAMAC hardware are the responsibility of Norsk Data and they are normally called in directly by the physics groups.

The HP and DEC configurations on the other hand have either significant plug-compatible content or have CERN equipment interfaced on the UNIBUS. To avoid problems there are arrangements for CERN staff to be called in to identify which equipment is faulty and to then call the manufacturer if necessary.

8. A limited facility is available on so-called "development machines" for the development of programs that are designed to run on the standard systems. Physicists may want to use this service while their own machine is taking data or because their configuration is inadequate for program development. As from

about the end of March '79 these development machines will all be installed in the 'Big Barn' area of the Central Computer Building (Bldg 513). At the same time all of the staff concerned with Online Computing Support will be moved together into Building 31.

9. Experimental computers can be connected to the machines at the computer centre, both for file access and for sample data analysis. The connection is made through the CERN Data Communications Network (CERNET). Please note that there are budgetting and control mechanisms for the use of the central computers. The CERN Computer Newsletter provides details.

For approval to link a computer to CERNET you should apply to J.M. Gerard (tel. 2883). At the present time all PDP-11s connected to CERNET are in fact linked through a gateway connection in an older network which links together only PDP-11s and is called OMNET.

10. Normal access to experimental computers is through terminals. A given terminal may access several computers at CERN if it is connected through the Independent Digital Exchange (INDEX). This can be thought of as a local telephone exchange for terminal lines. At any one time a terminal is attached to only one computer but by redialling, a process taking only a few seconds, it can be connected to any other INDEX host.

It can be very interesting to have at least a few connections through INDEX at each experiment. If some terminals in the counting room are attached through INDEX, then physicists can work on the Computer Centre machines during their shifts. If one or two lines into larger experimental machine are available through INDEX then people can work on the machine without wasting a good deal of time travelling around the site. That can be especially valuable for support staff who want to check the status of the installed software, or to help in troubleshooting, or for program development.

Requests for connection to INDEX must be made to the INDEX Project Leader, H. Slettenhaar (tel: 2173).

11. It is becoming increasingly common that software must be purchased or licensed. You should not assume that when you come to CERN with a minicomputer you will automatically be able to run the CERN-licenced copy of the manufacturers' operating systems or other proprietary software free of charge. You are

not permitted to copy proprietary software that is running at CERN and then take it away for use elsewhere unless you have written permission from the proprietor. People are asked to realise that this is a delicate area, and that reasonable behaviour on our part is the best guarantee of reasonable behaviour by the companies concerned.

12. When your installation is accepted as an installation supported by OC Group you will be given the name of a software contact, and a back-up. This person will be able to discuss your data acquisition problems with you and help you to use the standard packages provided. He or she will take responsibility for the correct functioning of these standard packages in your experiment. However this person will have other experiments and/or test set-ups to support and you should realise that this software contact is not available full-time. You can help in several ways.
 - (i) When requesting assistance to resolve problems try to make clear how urgent the problem is. Clearly systems taking data in beam lines have the highest priority.
 - (ii) Provide one person who can represent the requirements of your experiment. We do not expect to hold your hands and explain what computers, CAMAC and FORTRAN are. At least one physicist needs a good understanding of the whole data acquisition system. He should develop a good working relationship with the software contact.
 - (iii) Provide a log-book close to the computer and really use it to record all problems, new software installed, hardware changes, etc. Good records are invaluable for trouble shooting.
13. In principle support from OC Group is available to all groups who are participating in approved CERN experiments. Support arrangements must, however, be agreed in advance.

Sometimes outside groups come to CERN to run an experiment with their own online computer but wish to run our standard data acquisition and monitoring software. In these cases it is wise to contact OC Group before purchasing the computer, in order to ensure that it is compatible with the standard software.

We would also make a plea for all groups to ensure that they allow adequate space for their online computer(s) in their counting room(s).

14. Most of the discussion so far has concerned computers for data acquisition and monitoring in experiments. One section of OC Group is responsible for the support of test set-ups, which can range from simple lab tests up to complicated data acquisition installations in test beams. A major aim is to make uniform software available for these tests on a whole range of different equipment, including but not necessarily limited to HP 2100, NORD-10, PDP-11(including LSI-II) and CAVIAR. (CAVIAR is a CERN-designed Motorola 6800-based stand-alone test unit with CAMAC AND IEEE 488 interfacing).

15. One area where no standard support is yet available, but where we believe that some should be provided, is the use of trigger processors. A micro-programmable fast processor, ESOP, is being incorporated in three experiments but the major support comes from the experiments themselves. There are also small developments being made using ECL bit-slice technology (PDP-11/E) and using the SLAC-designed 168/E. OC Group has some experience in this area and can discuss and give advice. Users are urged to talk to us before embarking on projects which have repercussions on the whole data acquisition system.

16. It may be useful for people to know a little of the internal structure of OC Group. The Norsk Data Section is led by Chris Eck and is responsible for the maintenance and development of the standard data acquisition and monitoring system on Norsk Data computers. The DEC Section is led by Mike Sendall and fulfils an equivalent role on DEC computers. The General Applications Section is led by Per Scharff-Hansen and is responsible for test setups on many different types of hardware (see paragraph 14 above). This section is also responsible for the support of Hewlett Packard data acquisition systems. The Central Support Section provides technical and administrative back-up for the other three sections. It is being led at the moment by David Williams who is also Group Leader of OC Group. His deputy for 1979 is Per Scharff-Hansen.

17. In the future we hope to keep users informed of policies and developments in the whole area of online computing support by publishing this Newsletter. It seemed better to publish a separate newsletter rather than to try to combine everything into an expanded CERN Computer Newsletter. We thank our elder brother for showing us the (WYLBUR) way.

The next three issues, appearing at roughly monthly intervals, will discuss the details of HP, NORD and DEC support respectively.