JPRS-WST-84-018

4 June 1984

West Europe Report

SCIENCE AND TECHNOLOGY

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WEST EUROPE REPORT
SCIENCE AND TECHNOLOGY

CONTENTS

FACILITIES, FIRMS AT KIRUNA SPACE CENTER IN SWEDEN

Stockholm NY TEKNIK in Swedish 1 Mar 84 pp 36-37

[Article by Lars Pekka: "Kiruna--the World's New Space Ear"]

[Text] Kiruna is not doomed to extinction! The city may become the world's new space ear in 2 years, when images from the French Spot Satellite begin to be intercepted and processed there.

A new high-tech industry is springing up around this operation--with the entire world as its market.

An ordinary school bureaucrat is the man behind the creation of 136 new jobs in the field of computer and information technology in Kiruna.

The ideas of Thor Svensson, a director of studies, that the one and zero digits are not sensitive to geographical distances may do what untold delegations with millions in state funds have not been able to do: give Kiruna an industry that is independent of the mines.

Besides these 136 jobs, there are already plans for an additional 156.

And many believe that the number will double in a few years.

The new Space Building will be finished in the fall of 1984. Hundreds of Kiruna residents will work here in computer and information technology. Here are a few specific examples of what is going on in Kiruna at the present time:

--Esrange has become Europe's space center and will begin intercepting unique information in 1985 from the French Spot Satellite. The Spot Satellite will also be monitored and controlled from Esrange. Esrange is doubling its personnel from 50 to 100 people.

--Satellite Image Inc (Satellitbild AB), a subsidiary of Swedish Space Inc (Svenska Rymd AB), has 15 employees today and in 1986 will begin to process and sell information from Spot Satellite, which produces images with a resolving power of 10 x 10 meters. Fifty jobs are already certain. The growth potential of Satellite Image is almost unlimited due to the possibility of selling the unique information worldwide.

Siga Inc a company owned by the Department of Industry (Industridepartementet), is furnishing on-line administrative data service. It was launched in Gallivare, but the company already has 35 employees in Kiruna.

--Siga Business Development Inc (Siga Foretagsutveckling AB), together with LKAB Luossavaara-Kiirunavaara AB, has founded Data Center in the North Inc (Datacentralen in Norr AB), which will develop LKAB's data technology and sell its services to outside clients. Twenty computer operators have already transferred from LKAB to the new company.

--Teledata in the North Inc (Teledata in Norr AB), was founded by one of Thor Svensson's students. The company has five employees today and is selling information on line to clients in southern Sweden.

--Land Survey (Lantmateriet) is now employing 50 persons in Kiruna. In a special unit called Kiruna Map Center, all the real estate in Sweden is to be charted on new registration maps. The sources for the maps will come from Satellite Image.

--Control Data Inc, was founded in Kiruna and today employs 3 persons, a number that will grow to 20 in a few years. Control Data is working with technical data processing, planning and projections.

--AIB (General Bureau of Engineers) has developed one of the country's most fully computerized planning offices with 13 employees in Kiruna.

--SRF Tal and Punkt Inc, owned by the National Association of the Vision Impaired, is stationing a production unit in Kiruna for computer-assisted production of books in Braille. This could result in 25 new jobs.

Elementary Community Adult Education Courses

It started with elementary courses in computer technology at the Community Adult Education Department. Thor Svensson became alert to the possibilities of computers. He persuaded the school board to purchase several million kronor worth of computers.

This winter there are almost 700 Kiruna residents taking some kind of computer training. These range all the way from short-term study circles to university courses in cooperation with the Umea University and the Lulea Technical Institute. At present, Thor Svensson is working to establish a "space university" in Kiruna.

Space Industry

The proximity to the North Pole had already created a "space industry" in Esrange (satellites pass closest to the earth at the poles).

The decision of Swedish Space Inc to found Satellite Image for processing images from Spot Satellite opened unexpected possibilities.

"We had great numbers of unemployed people who were ready to make new decisions about their lives.

"We also realized that the digital zeros and ones were independent of distance. Their distribution to remote places presents no problems.

"We had tourism besides, an industry that depends on information.

"And, finally, we had the advantage that it is easy just now to get state support for investment in Kiruna.

"It was simply a matter of selling the idea."

Beat the Big Drum

Thor Svensson won over the town leaders, the county administration and other authorities, and they began to drum up sentiment for Kiruna as an up-and-coming data center. Symposia were arranged, and experts and "contacts" from all over the country have been consulted.

Thor Svensson's message sounded a bit strange in Kiruna, a town of miners with a workers-movement tradition.

"Look at Silicon Valley in California, where computer technology has spawned more young millionaires than anywhere else in the entire world. Let's do the same," blazoned a lavish multicolored brochure.

But nobody has protested against the message.

There is no doubt: Kiruna has a chance...

9992
CSO: 3698/371

SECOND ARIANE LAUNCH PAD AT KOUROU, BELGIAN PARTICIPATION

Brussels LA LIBRE BELGIQUE in French 6 Mar 84 p 11

[Article by Paul Dominique]

> [Excerpts] On the occasion of the seventh launching of the Ariane rocket, we were able to pay a visit to the Guyana Space Center (CSG) whose numerous facilities are spread over a vast 97,000-hectare tract.
>
> The most interesting point of this visit obviously was the new ELA-2 launch pad which is to be operational next year, a construction program in which Belgium is playing an important role.

The Ariane launch facility was designed to permit Ariane launches with all the safety, flexibility and efficiency necessary up to the placing in orbit of the payload. The facility basically includes two subsystems:

1. The Ariane Launch Complexes (ELA) 1 and 2 (under construction) which include all the specific installations necessary for final assembly, inspections and the Ariane launch operations. The present installations (ELA-1) permit six launchings per year of Ariane 1 and Ariane 3 models (that is one launch every 2 months).

2. The Payloads Preparation Complex (EPCU) which designates the means made available to users for the preparation of satellites.

The ELAs and the EPCU, as well as the other installations and equipment financed and developed within the framework of the Ariane program, are the property of the European Space Agency.

Second Launch Site

The decision to install a second launch complex (ELA-2) in Kourou was made in July 1981. This large investment (about 5 billion Belgian francs) was necessary for several reasons. The first launch site at any moment was in danger of being rendered unusable for several weeks, if not several months, in the event of a major accident at the time of a launch or as the result of a

delay in the preparation of a satellite (as was the case with the last two launches).

What is more, the credibility of the Ariane commercial program demanded that a second launch pad be available as quickly as possible to make it possible to give clients guarantees with respect to scheduled launch dates. Also, the present launch site will not permit the launching of future-generation Ariane rockets.

The dominant characteristics of the ELA-2 is the separation of the assembly and preparation area of the Ariane launchers from the launching area proper: between the two areas, there is a 1-km, two-track railway on which the mobile launch platform will travel, with the launcher set on top of it in a vertical position.

Since the platform in question is of variable height, it will be adaptable to the type of launcher used: from Ariane 1 to Ariane 4. The overall height varies in fact in a substantial way, as it is necessary for the cryogenic third stage, which is continuously "bottle fed" (in the hours preceding the firing) with liquid hydrogen and oxygen, to be at the right height vis-a-vis its nurse, that is the conventional umbilical tower.

Unlike ELA-1 procedures, this design assures great flexibility of utilization since a launcher can be assembled and prepared in the first area while the preceding launcher is still on its launch site where it is receiving its payload and undergoing the checks which precede every launch.

In the process, the delay between two launches can be cut from 2 months to 1; therefore, the ELA-2 in principle will be able to handle up to 12 launches per year; with the ELA-1 (which will remain operational), the CSG will now be able to have 18 launches per year. The adoption of this new structure for the facility involves the use of more advanced technologies, particularly in the sector of on-site data transmission (they are moving from analog to digital) and of electronic equipment (at present, for the most part they are using a decentralized data processing system with 57 scattered microcomputers).

The Belgian Role

Belgium has assumed an important role in this program. It is in third place, behind France (56 percent) and Germany (22 percent) with 15 percent (these percentages are as valid for financing as they are for the share of national industries in the implementation of the program).

ETCA [Aerospace Studies and Manufactures] (an affiliate of ACEC [Charleroi Electrical Engineering Shops]) had already supplied the electronic control panels (engine testing panel, launch integration panel and firing panel) for the first Kourou launch site; it was given the job for the second site. ETCA is handling the coordination of several subcontractors, in Belgium (Bell Telephone Mfg) and abroad (France, Italy, Switzerland and Denmark). The Belgian company by itself, or with ACEC, produces about 60 percent of the equipment and all the computer software of the ELA-2 electronic command center.

This software is particularly important since it covers 300,000 instructions. For ETCA and ACEC all of this has represented over 200,000 hours of work, the great majority of which was performed by highly qualified personnel and engineers. This equipment is now being installed in Kourou.

The first launch since ELA-2 probably will take place in February 1985 or April 1985 with the first Ariane 4.

At a time when the U.S. space shuttle is experiencing some "difficulty" placing satellites in geostationary orbit, the Arianespace Company, which is marketing the European launcher, takes pride in underscoring the fact that "numerous clients are perceiving the importance of Ariane, because of its technical and specific advantages (such as its capability of placing satellites directly in their geostationary orbit), because of the ideal location of the Kourou launching base and because of the flexibility of launches which can be expected after the start-up of the second launch pad.

Let us remember that Arianespace is being kept busy since its log of firm orders as of this date totals $735 million (about 43 billion Belgian francs), representing the launching of 27 satellites for 14 different clients (including five outside Europe) and that reservations up to 1988-1989 cover 18 satellites.

The Ariane program, therefore, is in "good shape"; and Belgium is participating extensively.

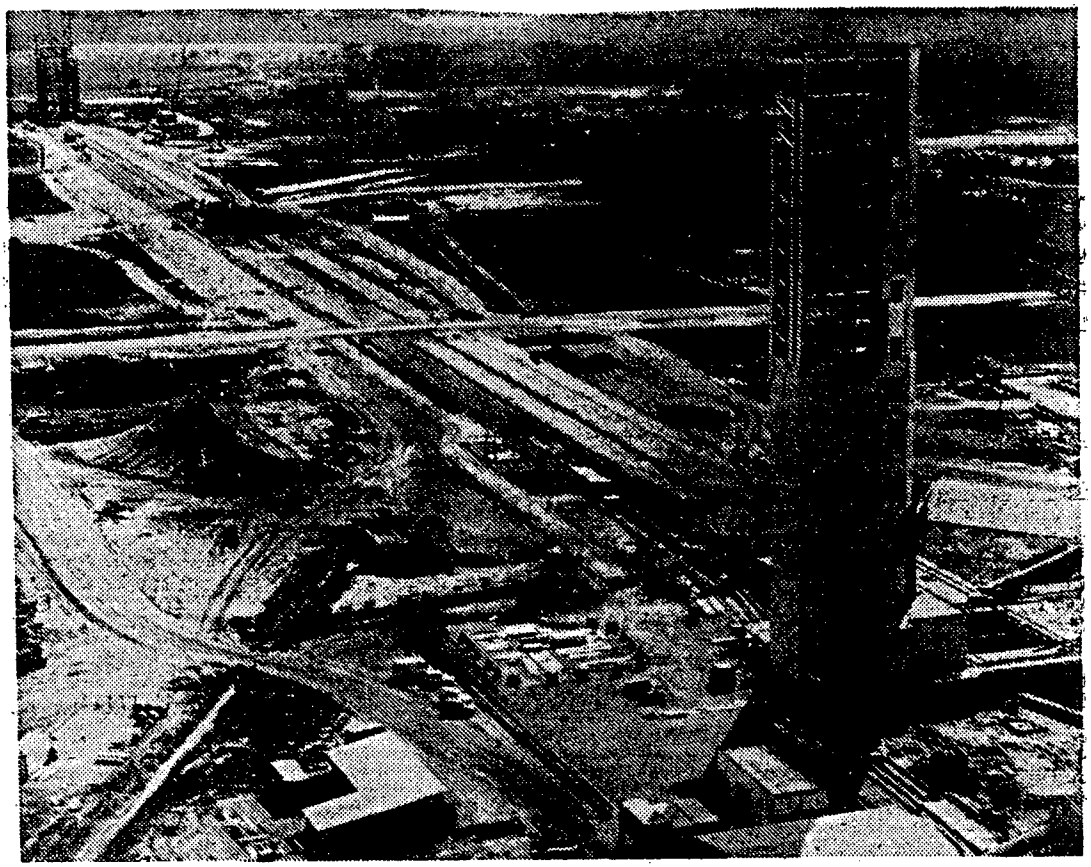

PHOTO CAPTIONS

[Photo not included] Ariane is a conventional, three-stage launcher. It is 47.88 m in total height, weighs 210 tons at takeoff and is capable of placing payloads of 1,700 kg in geostationary orbit. By means of certain additions and changes, Ariane 3 will be able to place payloads of 2,580 kg in orbit; and Ariane 4 will be even more powerful. It will be capable of carrying payloads ranging from 2,500 kg to 4,300 kg.

[Photo shown above] In the foreground is the umbilical tower of the ELA-2 site and in the background, to the left, the assembly tower. These two facilities are connected by a two-track railway of about 1 kilometer.

8143
CSO: 3698/410

SWEDEN'S STU PROPOSES FUNDING FOR METALS, CERAMICS RESEARCH

Stockholm TEKNIK I TIDEN in Swedish late winter 83 p 10

> [Text] The STU [National Swedish Board for Technical Development] plans to invest 320 million kronor in materials technology. A comprehensive study concerning the anticipated future development of construction material for the engineering and construction industries has been conducted by the STU. The study was reviewed in TEKNIK I TIDEN in the summer 1983 issue.

Metals

Steel with its great strength and flexibility combined with relatively low prices is forecast to maintain a prominent position as a construction material in the foreseeable future. Important future non-ferrous metals will be titanium together with aluminum and magnesium alloys.

The STU is planning continued large investment in metallic materials, including far-reaching, considerably concentrated investments of state support to speciality research institutes, fields of research pertaining to /critical and strategic alloy metals/ (22 million kronor over 5 years) and /aluminum and magnesium castings/ (18 million kronor over 5 years) together with programs for theoretical development in the field of /powder metallurgy/ (in progress, 8 million kronor over 6 years), /rapid solidifying alloys/ with a solidifying rate up to 10^5 C^0/sec (14 million kronor over 5 years) and /multiphase steel/, including the thin sheet steel, which is produced at SSAB's new wide strip mills in Domnarvet (15 million kronor over 5 years). Research collaboration with France, China, Norway, the Soviet Union and the EC (COST [European Cooperation in the Field of Scientific and Technical Research]) is planned.

Polymers

Polymer (polymer materials are plastic and rubber) construction materials offer great advantages from the manufacturing point of view because they facilitate rapid production of complicated parts and can be produced with low measurement tolerances and high surface finishing without expensive curing.

The STU is of the opinion that the polymer materials and polymer-based fiber composites are important future materials and is planning continued and new large investments in research fields relating to /polymer construction materials/ (in progress, 32 million kronor over 5 years), technical fiber composites/ (30 million kronor over 5 years) and /glue and joining methods/ (14 million kronor over 5 years) as well as programs for theoretical development on the subject of polymer-based fiber composites (in progress, 11 million kronor over 5 years), electricity conducting polymers/ (15 million kronor over 5 years).

Also planned is continued support for collective research at the Plastic and Rubber Technology Institute. Research collaboration on polymer materials and fiber composites is in progress and planned with countries such as France, Japan and the United States.

Ceramics

A material group that is presently exciting great interest in industrialized countries is high-performance ceramics from a type of silicon nitride, silicon carbide and SIALONs for use in cutting tools, heat exchangers, gas turbines and internal combustion engines, since they tolerate operating temperatures up to 1,400 to 1,500 C^0. STU is therefore planning a large investment (5 to 7 million kronor annually over a 3 year period) in this material group, including pertinent theoretical research at the Silicate Research Institute in Gothenburg and (HIPning) of ceramics at the Asea Cerama in Robertsfors. Research collaboration with Japan with concentration on this material is presently being discussed. Efforts relative to glass and conventional ceramics are anticipated primarily in the form of collective specialized research.

Corrosion

Corrosion of metals is estimated to cost the country many billions of kronor annually. In spite of this, the STU has deemed it necessary for budgetary reasons to cut the support for corrosion research. This support will occur chiefly in the form of state research with a planned investment of 4 to 5 million kronor annually. Metal corrosion is closely tied to treatment and coating of metal surfaces. For the two fields, that of metal corrosion and surface treatment together, an investment is planned that is larger than previous ones. Surface treatment technology is a field undergoing vigorous development. The planned effort concerns the physical and chemical properties of surfaces, together with processes for alloying surfaces with organic and inorganic materials.

9992
CSO: 3698/371

NEW ASEA BRANCH FORMED TO DO CERAMICS RESEARCH

Stockholm TEKNIK I TIDEN in Swedish late winter 83 p 11

> [Text] The recently founded company Asea Cerama in Robertsfors is an example of Swedish industry's current intention of acquiring a prominent position in the future-oriented field of construction ceramics.
>
> KemaNord Industrikemi's start up of production of silicon nitride--the base material for ceramics--in Ljungaverk is a second example.

Asea has been working with ceramics for over 10 years. Asea, together with other interested parties, is now investing large sums in something that could develop into an important branch of industry in a few years.

Base Material

Asea owns half of Asea Cerama; the other half is owned by KemaNord Industrikemi, Volvo, SKF and AC-Invest. STU has invested a considerable sum in basic technology development in Robertsfors--altogether 4.5 million kronor.

KemaNord is counting on Ljungaverk becoming a large supplier of high-class base materials for the manufacture of ceramic components.

"At the turn of the century, silicon nitride may be our largest product in Ljungaverk," says Christer Sjolin, director of KemaNord Industrikemi, a company belonging to KemaNobel.

Porefree Product

For the present, silicon nitrides are being produced mainly for research purposes. Real component production has not actually gotten started yet.

Before we leave the "plastic age" and enter the "ceramics age," a large number of problems remain to be solved in component production.

At Asea Cerama, experimental component production under high pressure and at high temperature is being carried out.

The ceramic material is condensed to porefree products having very precise form.

"The investments at Robertsfors are now making it possible for us to further develop and commercialize the technology and gradually to approach more exacting applications," says Hans Larker, director of Asea Cerama, which presently employs around 20 people.

Asea Cerama is considered far ahead internationally in this field, especially in the production of very dense ceramic products with very high precision.

Gas Turbines

The areas of application that Hans Larker believes are closest at hand are, for instance, diesel engine parts, hot ceramic wheels for turbo chargers, roller bearings and--in the long run--gas turbines.

Gas turbines that have ceramic turbine wheels can lower fuel consumption by almost half.

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CSO: 3698/371

ERRATUM: This article republished from JPRS-WST-84-014 of 4 May 1984 pp 1-3 to correct certain translated terms and to add omitted data to chart.

NEW MATERIAL, PROCESS SPINS OFF FROM VOLVO LCP 2000 PROGRAM

Helsingborg PLASTFORUM SCANDINAVIA in Swedish No 1/2, 1984 pp 46-47

[Article: "Wet Extrusion--a Spinoff From Volvo/Jotun"]

> [Text] It will be a long time before the reaction to Volvo LCP has calmed down. An interdisciplinary project of that caliber naturally gives rise to a great many spinoffs. One of these will reverberate in the world of plastics! We are thinking of Volvo/Jotun's improved method of wet extrusion which will be of tremendous interest to the reinforced plastics industry and its customers.

Wet extrusion is not entirely new as a method, but the project group from Jotun and Volvo succeeded in making such improvements that it will become very attractive to everyone who wants to have reinforced plastic with extremely high surface finish.

Before the Light Component Project, LCP, in which Volvo wanted to study the coming requirements and challenges of the automobile industry of the future, Volvo gathered together an international group of experts for the development work. Included in the group was Jotun, among others, which was given the task of working with the car's exterior. Roof, engine hood, doors and body panels were of course to be manufactured from lightweight material, fiberglass plastic, but Volvo's requirements for surface finish and production economy were not to be altered. This led to very extensive work, and when the whole thing was over the result was both a new construction material and a new production method.

Volvo and Jotun formed a project group for the exterior, for which the starting-point was the following conditions by the client: low weight, 2 mm maximum thickness, dimensional stability up to +80° C, class A finish after spray painting, easy to paint and repair, optimum rigidity and strength, good impact resistance, good resistance to chemicals, self-extinguishing properties and no toxic fumes in a gasoline fire.

The following work program was established:

1. Material and method studies for production of prototype cars.

2. Further development of the SMC [sheet molding compound] technique for large-scale series production; develop SMC-material with improved mechanical properties, surface finishing features, and lower dead weight.

3. Develop a new technique for series production of flat body details.

New Reinforced Plastic Material

Volvo's demands for both maximum surface finish and good impact properties required a great deal of development input by Jotun. High surface finish means, among other things, extremely little shrinkage in the polyester. A new type of low-profile polyester, with less shrinkage than anyone had ever been able to produce before, had to be developed. This was achieved by means of newly developed low-profile additives (thermoplastics and elastics) as well as with shrink-inhibiting fillers (calcium carbonate, aluminum trihydrate and microspheres).

Altogether about 60 different prescriptions were tested before establishing the finished, new quality for Volvo LCP 2000.

New Production Method

The next step was to find a suitable production method. The project group was not satisfied with the conventional SMC technique (SMC = sheet molding compound; polyester-impregnated fiberglass mats are cut to appropriate size and placed in the die before compression molding). The opinion was that SMC, with its semifinished production and curing process which is necessary before molding and the dispersion of strength properties as well as its tendency toward long- and short waviness in goods molded into thin sheets, was something they wanted to get away from.

Wet Extrusion

They decided on the wet extrusion method, which by no means is new, but which was regenerated by the project group into something which will have major application.

The difference between SMC and the earlier wet extrusion is to some extent that the fiberglass reinforcement is preformed and 100 percent adjusted to the mold space. This is made possible by a continuous fiberglass mat--newly developed by Vetrotex--with a thermoplastic binding agent. This binder opens up possibilities of preforming in a completely new way.

The advantages with this method are that the placement and distribution of the fiberglass reinforcement in the molded product can be predetermined.

The polyester mixture can be placed in batches on the preform of the mold and thus will not be preheated before the halves of the tool close. This opens up great opportunities for rapid curing systems and therefore short cycle times.

This method provides the same opportunity for IMC [in mold coating] as with SMC molding if dyeing is needed or if there is an antistatic surface.

When molding thin panels of light plastic sheet molding compound, long and short waviness is often created on large, flat surfaces. This is caused by flow tendencies and uneven fiberglass distribution, which together with pores are major problems.

All of this is overcome with wet extrusion using the technique now worked out by Jotun which produces panels that meet Volvo's demands. The participants in the "New Techniques" conference in Sandefjord were able to witness this with their own eyes just before Christmas 1983, and those who have been present at one of Volvo's presentations of the LCP cars also agree.

Besides short cycle times, this method is also said to require lower investments than the SMC technique.

In all likelihood it will not be long before we can see the next product manufactured with this method.

		Ordinary light plastic SMC	New method
Bending strength	N/mm^2	169	155
E-modulus bending	N/mm^2	13,230	8,190
Extension V/max bending load	%	2.0	2.8
Tensile strength	N/mm^2	84	84
E-modulus tension	N/mm^2	16,230	9,250
Tensile elongation at rupture	%	1.3	1.7
Fiberglass content	Weight %	27	25
Density	g/cm^3	1.9	1.76

Mechanical properties of the new wet extrusion material in comparison with a low-profile SMC.

11949
CSO: 3698/341

RECENT BIOTECH DEVELOPMENTS, PLANS IN FRANCE

Rhone-Poulenc Enters Market

Paris BIO LA LETTRE DES BIOTECHNOLOGIES in French Mar 84 p 2

/Text/ Rhone-Poulenc Agrochimie, a wholly owned affiliate of the RP group, will affiliate on a joint and equal shares basis with Seedtec International, an American firm affiliated with the Kay Corp petroleum group and specializing in sunflower seed.

Seedtec has substantial genetic resources in that sector, which is in full expansion in Europe and particularly in France, where the area under cultivation rose from 70,000 hectares in 1979 to 450,000 in 1983. That is one reason for RP's choice, together with the fact that sunflower seeds offer the most added value possibilities in view of their hybrid characteristic of non-reproducibility.

Seedtec is one of the leading firms in this field, with Seedco, Red River Valley, and Cargill. It has 50 percent of the turnsole market in the United States, and in 1973 took control of the French firm Lesgourdes (Gavadour-Cargill), which also specializes in turnsole.

Seedtec's two selection centers at Woodland, California, and Fargo, North Dakota, will be used initially by the new firm, which will later establish itself in Europe. For that purpose Rhone-Poulenc expects within a year to create a research center in southern France, and then plans other centers in other countries. Development of new varieties will be conducted by each of the two partners in its own market.

Thus Rhone-Poulenc is preparing to enter the field of genetic engineering and seed biotechnology in the wake of ELF Aquitaine and Lafarge Coppee. That orientation could lead, depending on technological spinoffs, to a reorientation of part of the group's activities in the future. The form is already present in seed distribution in Italy, where it sells the products of the firm Limagrain, and in Portugal.

Government Promotes Biosensors

Paris BIO LA LETTRE DES BIOTECHNOLOGIES in French Feb 84 p 3

/Text/ The Ministry of Industry and Research and the National Agency for Implementation of Research (ANVAR) on 31 January jointly decided to initiate a survey for the purpose of promoting innovations and technological progress in the field of biosensors and instrumentation for clinical biology as applied particularly to medical analysis and research. This is the aim of a priority program adopted by the ministry. In addition to ANVAR and the GBM /expansion unknown/, Biotechnologies, and Life Sciences and Health departments of the ministry, other agencies associated in the survey are INSERM /National Institute of Health and Medical Research/, CNRS /National Center for Scientific Research/, ORSTOM /expansion unknown/, and the Office of Higher Education and Research of the Ministry of National Education. Financing for projects adopted will be provided by the organizations named (ANVAR aid to innovation for industrial projects and research by industrial laboratories; specific financing for departments of the Ministry of Industry and Research and for public research organizations).

This survey is addressed to French industrialists and to laboratories both public and private.

Procedure of Survey

The survey of biosensors and analytical instrumentation aims at selecting and providing financial aid to research and industrialization programs concerning:

1. Innovative techniques or new analytical methods using biosensors and original captors (for example, molecular probes, complex immunoreagents, monospecific antibodies);

2. Development of decentralized exploratory and diagnostic facilities (particularly for detection analyses, bedside monitoring of patients' condition, and diagnostic tests offered to the general public);

3. Creation or adaptation of analytical systems usable in unfavorable technical environments, particularly in developing countries.

Project selection will be done by an examining committee made up exclusively of representatives of public agencies and other organizations participating in the survey, plus a small number of independent experts. In accordance with a procedure heretofore applied in other instances, detailed analysis of industrial projects will be entrusted to an expert duly accepted by the firms concerned.

The committee will take special care to safeguard the confidentiality of all projects examined, and may, in the light of proposals received and following selection, recommend associations of partners with a view to attaining the greatest possible industrial efficiency for programs adopted.

Instructions for Respondents

A declaration of intent form is provided for persons wishing to respond to the survey. Proposals submitted should not exceed two pages in length, and should give particulars as to the present status of the project, its objective and anticipated methodology, the time required for completion, and an estimate of costs.

Declarations of intent should reach ANVAR, 43 Rue Caumartin, 75436 Paris Cedex 9, before the 31 March 1984 deadline.

For all information contact ANVAR Paris (M Michaud), tel. 266-93-10, or GBM Department, Ministry of Industry and Research (M Broun), tel. 634-22-99.

International Training Organized

Paris BIO LA LETTRE DES BIOTECHNOLOGIES in French Feb 84 p 1

/Text/ The executive secretary of the International Biotechnologies Organization, M Marc Chopplet, has just issued a brochure detailing opportunities for biotechnological training in Canada, France, Italy, Japan, West Germany, and Britain.

Among the organization's spheres of activity is the setting up of training programs designed for candidates from developing countries who wish to undertake periods of specialized training in one of the above-named countries.

The brochure sets forth for each host country the fields of research offered, the entrance level required, the number of students accepted, the date and duration of courses, the diploma awarded, and the scholarships available. Also included is a set of application forms for candidates.

This brochure, of course, is but one facet of the organization's activities. At its December 1983 Paris meeting presided by M Pierre Douzou, it decided on three priority fields for cooperative research:

Cell bioconversion (pilot country, Japan);

Extraction-purification (pilot country, UK);

Nitrogen fixation (pilot country, Italy with the support of Canada).

More specific proposals concerning those three fields are to be made by the end of this month, and the organization's next meeting is planned for April, in London.

Training Accord with Japanese

Paris BIO LA LETTRE DES BIOTECHNOLOGIES in French Feb 84 p 1

/Text/ Within the framework of Franco-Japenese scientific and technical cooperation an agreement was signed 30 January 1984 by Dr T. Miyazima, president of the Riken Institute, and M R. Dedonder, president of the Pasteur Institute.

This agreement, which provided for exchanges of researchers and a symposium every two years, will make possible a steady collaboration by the two organizations in fields of research of interest to both, and particularly in that of biotechnologies.

Animal Feed Initiative

Paris BIO LA LETTRE DES BIOTECHNOLOGIES in French Feb 84 p 9

/Text/ The government wishes to reduce the deficit (Fr 7 billion in 1982) in our balance of payments in the animal feed protein sector. Consequently the Ministry of Industry and Research has just set up a Scientific Committee on Proteins and Animal Feed in order to further increased agricultural and industrial production of proteinic substances and better utilization of the nation's protein resources.

An invitation to tender along those lines will soon be issued.

Water Purification Project

Paris BIO LA LETTRE DES BIOTECHNOLOGIES in French Feb 84 p 9

/Text/ A biotechnological laboratory will be built in 1985 by the Societe Lyonnaise des Eaux, according to Managing Director Jerome Monod.

Some personnel may be hired by the end of 1984, the laboratory being scheduled to enter service in 1986.

Lyonnaise des Eaux, which will spend Fr 124 million for research in 1984 compared to 100 million in 1983, is now developing its activities in three fields: water, wastes, and energy.

Noteworthy biotechnological studies now in progress concern biological dephosphorization of water, and the possibilities offered--particularly for treatment of effluents in agriculture and food processing--by means of yeasts isolated by the Japanese firm Ajinomoto for treatment of effluents from its chemical plants.

Monoclonal Antibody Production

Paris BIO LA LETTRE DES BIOTECHNOLOGIES in French Mar 84 p 9

/Text/ The CNTS /expansion unknown/ is developing a unit to produce new monospecific reagents to permit diagnostic determination of individuals' blood types.

Blood type identification rests on recognition, through specific antibodies, of antigens expressed by blood cells. At present the reagents used for that identification are derived either from human serums rich in natural antibodies, or from serums enriched with antibodies by immunization of volunteer subjects.

Those antibodies are quite obviously polyclonal, and cannot be standardized. Moreover, they are in large part imported. Serum purchases abroad rose to Fr 1.5 million in 1982.

CNTS has perfected an original technique for producing monoclonal antibodies strictly specific to blood types A, B, AB, and Rh D through association of two complementary techniques: cellular hybridization and viral transformation.

Thus it is possible to create cellular strains capable of secreting, indefinitely and in vitro, a monospecific antibody.

The advantage of this new technique is easily seen: by providing a mode of controlled and infinitely reproductible production of biosensors needed for determination of blood types, the method considerably reduces the cost of producing such biosensors.

The process is now operational, and CNTS is first to commercialize this type of biosensor. It thereby takes a lead over its major foreign competitors.

For further information, write to Box 216, BIO, which will forward (service restricted to our subscribers).

UPSA Developing Interferon

Paris BIO LA LETTRE DES BIOTECHNOLOGIES in French Mar 84 p 10

/Text/ UPSA Laboratories, known for their effervescent aspirin, are preparing, thanks to a 1981 agreement with the Swiss firm Cyclotech, to perfect clinical development of Beta interferon.

The objective is to file a marketing authorization within 18 months, or during 1985 or 1986. Production prospects should by then be 5 billion units per month at the start, with increases to reach 20 billion per month by 1990.

Production and marketing will be done by UPSA, which has obtained the patent for France and certain other areas including Spain, Belgium, Africa, and the Persian Gulf. Concerning the application for marketing authorization, the only indication to be presented will relate to virology, since the product has already given promising results in treatment of chronic hepatitis and herpes.

In addition, experiments have been done on multiple sclerosis, and research in cancerology is not ruled out.

UPSA's orientation towards biotechnology goes back to 1980, when it was concerned with monoclonal antibodies. After its contacts with Californian firms proved unproductive owing to uncertainties in development of certain techniques, the group turned to Cyclotech, which has perfected a Beta interferon based on American research. Its process does not involve genetic engineering, but employs instead a product of human origin obtained by extraction and purification from fibroblasts.

For development up to the pre-industrial stage UPSA plans to invest Fr 25 million, which qualifies it for an ANVAR subsidy.

UPSA is pursuing its own research along more conventional lines which include gastroenterological and cardiovascular programs. The research budget totals Fr 60 million. We note that the group controls nearly half the market for aspirin in France (50 million tins), and that its turnover has grown by 20 to 25 percent in the last few years to reach Fr 450 million in 1983, of which 22 percent represents exports.

A more pronounced orientation of the group toward the biotechnological field will depend on results obtained with development of Beta interferon.

For further information, write to Box 217, BIO, which will forward (service restricted to our subscribers).

ELF Aquitaine Expanding

Paris BIO LA LETTRE DES BIOTECHNOLOGIES in French Feb 84 p 11

/Text/ ELF Aquitaine, in its monthly bulletin, has just published the results of the group's operations for 1983.

From its manifold activities, we have set out what more particularly concerns biotechnologies.

Thus in the agro-bio-energy field "efforts have focused on energy uses of urban and industrial wastes .... Negotiations are in progress with industrial clients, and are supported by positive economic results. They are oriented toward a regrouping of those activities in a specialized firm" which has been named Bioflamme S. A.

Concerning affiliates of ELF Bio-Industries (EBI), "restructuring of the seed sector was pursued in 1983, and made possible a considerable recovery, for that activity released a positive MBA for the fiscal period .... Jointly with Entremonts, in which the group has taken a share, the MONSERBIO Group has been created and charged with inventorying synergies and lines of development in the milk sector, and with contributing to research and development work."

In addition, as "concrete expression of its vocation of exploiting biotechnological spinoffs in the agro-food sector, EBI has taken a capital participation in the Institute of Agro-Food Industries Development (IDIA)."

In the field of flavorings, "taking control of Benard and Honnorat has given SANOFI a first rank position in France in the food flavorings sector. After restructuring of its different constituent units, this activity should prove an important line of development for SANOFI."

Finally, ELF confirms the very early entry into service of the Labege Research Center near Toulouse, where research teams are already at work on important projects relating to pharmacy, bio-industries, and petroleum, both upstream and downstream. Certain aspects of enzymatic engineering are dealt with at the Lacq Research Center. Several projects, particularly in pharmacy may well result in industrial developments in a very few years.

6145
CSO: 3698/417

BUDGET, 1983 PROGRAM OF FRENCH BIOTECH COMMITTEE

Paris BIO LA LETTRE DES BIOTECHNOLOGIES in French Feb 83 Special Supplement pp I-IV

[Text] The National Biotechnology Committee, which Jean-Pierre Chevenement has called a "veritable parliament that will be the stimulus for the activating program and the initiative for political orientation in the biotechnology field," met for the first time on 31 January under the chairmanship of the minister of research and industry.

In his introductory speech the chairman indicated that this ambitious program "should make ours one of the top-ranking countries in a field that is essential for its future."

The minister also stated that, although our bio-industry is well positioned in a number of sectors, they are not all going to develop in the same way: strong growth for pharmaceuticals, especially the immunoindustry; appreciable growth for agrofood; potentially strong growth for water pollution control and energy. In addition, there are bio-industries yet to be developed and others that are yet to be created.

France can rely on two principal assets:

- brilliant and effective government-sponsored basic research, with more than 5,000 research workers.

- a dense and diversified industrial network which nevertheless must make a notable effort where applied research is concerned.

To give impetus to realizing the "Biotechnology Expansion" program, the executive secretary, Gilbert Durand, assisted by a program team, will have at his disposal for 1983 a budgetary allotment from the Research and Technology Fund, in the amount of 95 million francs (compared to 47 million francs in 1982). This budget will be broken down as follows:

- Logistical support.....7 million francs
- Microbiology.....6 million francs
- Microbe production.....7 million francs
- Fermentation axis.....4 million francs
- Enzymology--enzymatic engineering.....4 million francs
- Genetic engineering.....5 million francs

- Plant stock improvement.....3 million francs
- Vaccines--bioreagents.....4 million francs
- Training.....5 million francs
- National Education.....2 million francs
- Industrial activities .....48 million francs

I. Logistical support for biotechnology

The purpose of these operations is to facilitate access to data banks and colonies useful for the development of biotechnologies or even, if necessary, to make it possible to implant them on national territory.

1. National Data Bank for nucleic acid sequences and their development, which is carried out in close liaison with the European Molecular Biology Laboratory in Heidelberg.

2. Colony bank. The Pasteur Institute is responsible for the National Collection of Micro-organisms. It has been agreed that:

- a catalogue will be prepared listing the existing collections in France;
- a data bank will be prepared dealing at the outset with a limited number of species.

This project is being drawn up in liaison with the working group, EEC Biotechnology Information.

3. Preservation of colonies (mushrooms and plant cells)

An investigation has made it possible to inventory about 15,000 colonies of mushrooms in 67 public laboratories. Preservation is most often assured by periodic subcultures which frequently are accompanied by the loss of certain characteristics. Also, before planning a data bank collection the preservation of colonies should be worked on.

The head of the project will probably be a manufacturer and the participants will be the Museum (Crytogamy and Applied Chemistry Laboratories), the Pasteur Institute (Mycology Department) and the INRA [National Institute for Agronomic Research] (Plant Pathology Station, Versailles).

The project will be expanded to include cryopreservation techniques applied to plant cells, tissues or organs. Participants would include the University of Paris VI and the CNRS [National Center for Scientific Research] laboratory in Bellevue. Collaboration will be established with one of the rare specialists in this field, Dr Kartha of the University of Saskatoon, who is prepared to receive a trainee.

II. Contracts for programs with the public research organizations

The end result of these contracts will be to strengthen, through the granting of supplementary incentive loans, those laboratories that have decided to set themselves firmly in the direction of carrying out biotechnology programs. Those in charge of the organizations concerned will designate, in conjunction with the program team, those laboratories with precise research themes, according to the modalities appropriate to each organism.

1. CNRS

Three themes have been selected:

- Study of conditions for the production of molecules of biologic interest from cloned genes.
- Research on new vectors and new receptor cells.
- Microorganisms of biotechnological interest.

The CNRS has named one person to be responsible for each category. Scientific expertise in their files will be provided by the spokesmen for two ATP [expansion unknown] committees: "Organization and Expression of the Genome" and the Microbiology Committee. The laboratories will be selected from among those responding to the CNRS call for bids, jointly by the program team on the one hand and the president of the ATP and the theme directors on the other hand.

2. INRA

From among the INRA proposals and, after discussion with the organization and the MST [expansion unknown] (Department of Agrofood Technology), the following projects were chosen:

- Genetic engineering
  plant cell
  entire plant
- Biotechnology of mocroorganisma of industrial interest.
- Biological pesticides.
- Cloning and sequencing of the genes of milk proteins and their localization.
- Diagnostic reagents by obtaining monoclonal antibodies (veterinary medicine).
- Participation in an ATP on proteases and enzymatic engineering.
- Training.

Most of the laboratories that are to receive aid have been identified. The follow-up activities will be provided by a Biotechnology Commission which is part of the INRA and is made up of 8 members from outside the INRA.

3. Pasteur Institute

a) Health Sector
   Vaccines by means of genetic engineering
   Analyses and diagnoses
   Vector construction
   Neurobiology

b) Microbiology Sector
   Cloning of genes in Bacillus subtilis
   Biological insecticides
   Methylotrophic bacteria

c) Chemical technologies applied to genetic engineering (peptide synthesis and oligonucleotides)

d) Training

4. INSERM [expansion unknown] (in progress)

III. Contracts for Programs with Themes

These contracts are set up directly by the program team on priority development projects that are not within the purview of any organization. Each theme is headed by a project chief and includes various partners (public and industrial laboratories). Follow-up is provided by two persons from outside the project. The principal contracts under consideration are the following:

1. Microbial polysaccharides

The program includes the screening of colonies, the isolation and the properties of the polysaccharides (establishing a schedule for investigating the different properties in terms of potential utilization), making products of potential interest, improving production (hyperproducers) for the selected compounds.

The project chief is chosen. Four public and 3 industrial laboratories participate.

Scientific support comes from the CNRS (Chemistry Sector).

2. Enzymology and enzymatic engineering

An enzyme industry can only be revived in France if it is supported by powerful research.

The CNRS has undertaken a study of enzymology research and will submit proposals.

At the same time, a project sponsored by a manufacturer in the process of preparation. The enzymes chosen are the amylases. The program includes screening of colonies (thermophiles in particular), research on hyperproducers, chemical changes in enzymes, production, extraction and purification, start-up.

3. Nitrogen fixation

Three years ago a GIE [Economic Interest Group] was created among ELF [Gasoline and Lubricants Company of France], EMC [Mining and Chemical Enterprise], Pasteur, the INRA and several university laboratories. The contract is in the process of being renewed. The Research Fund will intervene to aid the only two French laboratories which are not members of the GIE but will nevertheless be associated with its work. All of the French research dealing with nitrogen fixation will thus be grouped together.

4. Fermentation

The formation of a GIP [expansion unknown] among the four French laboratories working on fermentation is envisaged, with participation of manufacturers and in close liaison with the Research Board of the Ministry of Education.

5. Grapevine improvement

France is behind Australia and the United States. On the initiative of Moet Hennessy, three university laboratories and one INRA laboratory have been combined in a project to initiate research based on the data of modern biology in this field.

IV. Industrial Contracts

The purpose of these operations is to facilitate the creating of businesses or to encourage existing firms (national or private) to provide themselves with an infrastructure enabling them to acquire and develop competence in biotechnological production (genetic engineering, microbiology, monoclonal antibodies, enzymes, seed, etc.). Most of these activities are under study in close liaison with the CODIS [Orientation Committee for Development of Strategic Industries], the DICID [expansion unknown] and the ANVAR.

V. Training

Approximately half of the scholarships granted in 1982 are assumed to have been renewed in 1983 (≅15) for 1 year.

New scholarships will be created (≅8) under the terms of the program agreement with the CNRS, with a number of positions available at the end of the course in the fields of genetic engineering, microbiology and enzymatic engineering.

Scholarships will also be provided for under the theme program agreements.

VI. Information--Dissemination of Culture

A joint action is in the process of being worked out with mobilizing program No 6, Promotion of French, with a view to putting together a biotechnological collection with the publisher, Masson.

VII. Foreign Relations

EEC

Information in Biotechnology working group

French teams concerned with four projects:

- European bank of nucleic acid sequences (for storage)
- European center for biotechnological information (CDST [expansion unknown] of the CNRS)
- Expansion of the enzymatic engineering data bank (University of Compiegne)
- Feasibility study of a European computerized system for collecting colonies of microorganisms (Pasteur Institute and National Collection)

Quebec--Canada

Renewal of actions begun in 1983 is planned.

Japan

In progress: fitting into the activities provided for under terms laid down by the large Franco-Nipponese Commission.

Contacts with Norway, Sweden and Austria.

Formation of Five Working Groups

At the meeting on 31 January 1983 of the National Biotechnology Committee it was decided, in order to enable activities to have permanence and follow-up, to form five working groups. Each of these groups is taken charge of by a vitalizing member of the National Committee, assisted by a member of the program team.

The following subjects were decided upon:

- Technological vigilance, which will permit ongoing actualization of the program's content, the follow-up and the evaluation of its execution.
- Financing, public or private, of research and development in the field of the biological industries which must be brought into harmony.
- Training of specialists and a labor force adapted to the new biotechnological professions.
- Employment, security and regulation
- International cooperation

An initial point will be carried out at the next meeting of the National Biotechnology Committee, scheduled for 31 May 1983.

List of Members of the National Mobilizing Program "Expansion of Biotechnologies"

Jean-Pierre Chevenement, minister of research and industry, chairman

Roland Morin, general director of research and technology

Louis Gallois, general director of industry

Robert Chabbal, president of the Scientific and Technical Mission

Louis Lucas, Department of Agricultureal and Food Industries, Ministry of Agriculture

Jacques Dangoumau, director of pharmaceuticals and medications, Ministry of Health

Jacques-Henri Weil, Research Department, Department of Research, Ministry of National Education

Bruno Gamby, member of the Budget Department, Ministry of Economy

Claude Frejacques, president of the CNRS

Philippe Lazar, general manager of INSERM

Raymond Dedonder, general manager, Pasteur Institute

Michel Pecqueur, general director, AEC

Jacques Poly, president and general manager, INRA

As representatives of their respective trade union or professional organizations:

Edmond Toromanoff, CFDT [French Democratic Confederation of Labor]

Jean Guenin, CFTC [French Confederation of Christian Workers]

Daniel Tavard, CGT [General Confederation of Labor]

Gerard Fosse, CGT-FO [Workers Force]

Mme Annick Jacq, FEN [National Education Federation]

Mr Jouve, CGC [General Confederation of Managerial Personnel]

Mr Fillet, CNPF [National Council of French Employers]

Mr Sicard, CGPME [expansion unknown]

Abel Caubios, CNJA [National Young Farmers Center]

As qualified individuals:

Jean Chambon, professor, Louis Pasteur University, Strasbourg

Jean Dausset, professor, St Louis Hospital of Paris, member of the Institute

Pierre Douzou, professor, National Museum of Natural History, member of the Institute and vice chairman of the Committee

Francois Gros, professor, College de France, adviser to the prime minister and member of the Institute

Alain Guy, adviser to the president of Lafarge Coppee

Michel Horps, general director, Research and Investment Union

Robert Lattes, manager, Bank of Paris and the Netherlands

Michel Lavalou, general director of Research and Development, Rhone-Poulenc

Jean-Claude Pelissolo, member of the board, CDF [French Coal Board]-Chemical

Romeo Roncucci, director of research, Clin-Midy

Finally, by ministerial decree of 28 January 1983, Gilbert Durand was named executive secretary of the mobilizing program Expansion of Biotechnology.

8946
COS: 3698/414

FOKKER RECORDS PROFIT FOR '83, SEES GOOD PROSPECTS FOR '84

Rotterdam NRC HANDELSBLAD in Dutch 24 Apr 84 pp 1, 15

[Text] The Fokker aircraft factory has closed the books in 1983 with a net profit of 18 million guilders, following a loss of 10 million guilders in 1982.

The turnover increased by 14 percent and totaled 1.5 billion guilders. The increase was due entirely to the F-28 program, in which 19 planes were delivered, 9 more than in 1982 and the highest number ever in a single calendar year.

The operating results improved by 15 million guilders, rising to 32 million guilders. The result in the construction of new airplanes and spacecraft climbed by 9 million guilders to 43 million guilders. In the maintenance and repair sector, it climbed from 10 million to 23 million guilders, and effort for development operations for its own account increased by 5 million to a total of 40 million guilders.

As was the case for other manufacturers of aircraft, Fokker too had to struggle the previous year with a slack demand for new machines. In 1983 Fokker sold only six F-27 and seven F-28 airplanes. This year, a total of twelve F-28s are to be delivered.

Fokker lost a potential order for F-28 airplanes from Ansett-Transport Group in Australia to the British airplane factory British Aerospace. The order was worth some 60 million guilders and went to the BA-146 aircraft.

"We had high hopes of getting the order," says a spokesman for Fokker, "because Ansett is an old client of ours and is already flying some F-28s. But there was an extensive model trial, and the BA-146 is a different aircraft with more seats."

In February, Fokker sold two F-28s to the Australian East-West Airline, a competitor of Ansett. Fokker has been active in the Australian market for 20 years now. Four different companies are presently flying there with altogether thirty-five F-27 and sixteen F-28 aircraft.

Contracts were signed in 1983 for delivery of six Friendships to three clients. Discounting a few cancelled orders, total sales of these amounted to 754

aircraft (including the aircraft formerly built under license by Fairchild in the United States).

Fokker hopes to maintain and strengthen the market position of Friendship by developing new versions of the F-27 Maritime. Here, attention had to be given to variants for tracking and combating surface vessels and submarines, for border monitoring and tracking and identifying low-flying airplanes.

Revision, modification and repair work constituted an essential part of the operations. Altogether, sixty-five F-27s were worked on in Fokker's shops as well as in a number of countries to which work teams were dispatched. The launching of the F-27 successor, the Fokker-50, was officially announced on the occasion of the silver anniversary of the Friendship.

F-28 Fellowship

Although a slight improvement was noted toward the end of the year, 1983 was characterized by a weak demand for the Fellowship and by strong competition from second-hand aircraft. Sales were made only with extreme difficulty. Nevertheless, contracts were signed with four clients for delivery of seven airplanes for which financing was considered assured. On the other hand, acquired contracts for whose ratification or financing there is still some doubt were not included in the count.

Considering the several cancellations, two hundred and eleven F-28s were sold by the end of the accounting year. The sales potential for the F-28 in the coming years is thought to be reasonably good. Twelve aircraft of this type are to be produced in 1984.

Worthy of mention is the sale of twelve second-hand F-28s to the American airline Piedmont, which took an option on 8 more units. It was anticipated that this will considerably enhance the position of the airplane in the United States. These machines were acquired as trade-ins and will be thoroughly rebuilt in Woensdrecht before delivery in 1984.

Extensive market studies showed that the large airline companies need economical, quiet aircraft for short and intermediate distances with a capacity of 100 to 110 passengers.

In response to this, the Fokker-100 with 107 seats was launched. The new airplane will make its maiden flight in 1986.

The manufacture of F-16 components was continued in 1983. The operations in the final-assembly line of completed airplanes went according to schedule.

In 1984, the production tempo is being reduced until the eventual delivery rate of twelve airplanes per year for the Royal Air Force has been achieved.

The decision concerning the fourth continuation contract with the American Air Force for the delivery of 57 F-16s (to be assembled by Fokker) was made in Fokker's favor at the end of the report year. This brought the total of Dutch orders up to the anticipated 213 aircraft.

As compensation for this fourth Dutch continuation contract, 186 sets of components (fuselages, wing parts and wheel doors) are to be assembled for American Air Force planes.

Personnel

The 1982 decision to reduce the number of jobs at Fokker by 1,400 was carried out in 1983.

Forced retirement had to be imposed on 450 workers under 57 years of age; a like number left by reason of special regulations.

Considering the remaining turnover, the personnel was reduced in 1983 from the previous year by more than 1,000, down to a total of 8,397, which the annual report claims achieved the fixed target in a socially responsible manner.

9992
CSO: 3698/381

CIVIL AVIATION

DISCUSSION OF FRENCH FINANCIAL PARTICIPATION IN A 320

Government Fundings, Loans

Paris LES ECHOS in French 12 Mar 84 p 10

[Article by Hubert Levet: "A-320: Borrowing and Capitalization"]

[Excerpt] The Aerospatiale CCE [coordinating and executive committee] confirmed on 8 March 1984 that the A-320 will go into production. (Firm orders for 51 planes (with options for 45 more) have been received since a memorandum was signed by Cyprus Airways for a firm order for four A-320's and an option for four more. The Cyprus company has also decided to acquire an additional A-310.) The CCE also addressed the question of French financing of the program (36 percent of the aircraft, which is less than for the A-300). The government will help the aircraft manufacturer overcome its present financial difficulties by making a Fr 100 million capital grant (Fr 250 million for SNECMA [National Society for Aircraft Motor Research and Construction])

The company is borrowing Fr 1.2 billion in two installments of Fr 8 million and Fr 4 million each. There are three reasons for this kind of financing: the launching of the A-320, a drop in orders and return on investment (Fr 508 million in 1984). The government has underwritten 75 percent of the research and development costs of the little Airbus and has covered 85 percent of the total in the first 3 years.

In order to adapt production potential to actual demand, the production section of the aircraft division (Nantes-Saint-Nazaire, Meaultes) will shut down for 2 days a month from April to September for refitting, especially since Toulouse (assembly) is not on the list. Also, as of the date of the announcement, 13,422 wage earners were working 39 hours a week; 4,363 were working 38 hours, and 7,678, 37 hours.

France in Good Position

Paris LES ECHOS in French 13 Mar 84 p 8

[Article by Airy Routier: "France Increases its Leadership in Airbus Industrie"]

[Text] Official start-up of the A-320 yesterday.
The French, British, German and Spanish civil aviation officials, Charles Fiterman, Norman Lamont, Martin Gruner and Louis Carlos Crossier, respectively, met for 2 hours in Bonn yesterday morning to "approve, on behalf of their respective governments, the start-up of the A-320 program by Airbus Industrie."

In the final communique, the ministers stated that they were convinced that "this new program would play a capital part in strengthening the industrial and commercial capacity of Airbus Industrie, on which depends the success of European cooperation in the field of civil aviation."

However, no document was signed. The agreement will be finalized in about 60 days by an intergovernmental memorandum that will be the actual birth certificate of the little 164-seat Airbus. Will there be any problems in drafting the memorandum? "It is just a matter of setting forth in good order the conditions of cooperation between industrialists as established in the record of the meeting, but the decision has been made, and the work is beginning," answers Charles Fiterman.

The main problems have been settled, especially each country's share in the financing, which will generally determine the share that each will have in the aircraft itself (except for motors and accessories).

In comparison to the two older models, the A-300 and A-310, the newborn will be much less German, a little less French, a little more Spanish and a lot more British (see table). But the reduction in the French share is only apparent. Actually, the A-320--surprise!--will probably turn out to be more French than the earlier models. The A-300's motors were American with a little French subcontracting, but the 96 A-320's ordered to date will have CFM-56 motors developed and produced equally by General Electric and SNECMA.

Table: Fr 12.5 Million in Unequal Shares

country (company)	A-300 Finance Share	A-320 Share	Main Work on the A-320
France (Aerospatiale)	37.5 pct	36 pct	Cockpit, fuselage section, assembly
Germany (MBB)	37.5 pct	31 pct	Vertical tail parts, fuselage section, mobile wing parts
U.K. (British Aerospace)	20 pct	26 pct	Wings
Spain (Casa)	4 pct	6 pct	Horizontal tail parts

(Note) The figures do not total 100 percent; they are approximations and are subject to slight downward adjustment if Airbus Industrie succeeds in securing a small place for Belgium (Bel Airbus) and Australia.

France: Nearly 50 Percent of the Value

The choice of equipment--20 percent of the aircraft's final price--has so far favored France (which furnished 60 percent of the equipment for the A-300 and 50 percent for the A-310). The French share of the A-320 could come to 42 percent of the final price of the complete aircraft ($24 million).

Considering the fact that a twin-jet aircraft is generally preferred because of the replacements necessary on a triple-jet aircraft and because of the high cost of reconditioning during the life span of the plane, it can be confidently stated that the French share in the project will not be far from 50 percent. Of course, the advantages of a multinational consortium will be retained: the 48 companies that are already Airbus customers have expressed a need for more than 600 A-320's, and the companies alone that have a financial stake in the project represent a potential market for more than 400 planes.

A Financing Share for SNIAS

France's partners have been well aware of this state of affairs and have tried to obtain guarantees. Thus, the official communique states, at the request of Great Britain and the FRG, that the "A-320 will be offered to companies with the CFM-56 or the V-2500 motor" that has been developed by Pratt and Whitney, Rolls Royce, the Germans and Japanese.

This is a motor of an entirely new design, one that has, indeed, not been completely defined. But the appended sentence means that the A-320 will never be the aircraft of a single engine-producing company--unlike the A-300 at the beginning.

Similarly, the French are reported to have agreed to reduce their suppliers' share in favor of the FRG and Great Britain by offering MBB and British Aerospace more autonomy in their choices. Theoretically, the French share should then fall to 40 percent.

But France will have all the advantages by taking the British and Germans at their word, namely that all options shall be exercised on the sole criteria of productivity. French suppliers are often in the best position, as Martin Gruner himself admitted during the press conference.

"Also, Air France and Air Inter have both ordered 70 of the first 96 planes and will be in a position to order French equipment," says Daniel Tannenbaum, general director of Civil Aviation.

In short, the project has made a slow but good start for France, which will devote about Fr 5 billion in the coming years. One important innovation is that 85 percent of this investment will be listed in successive government budgets in the form of reimbursable advances, while 15 percent will be left up to Aerospatiale to raise from its own funds or through borrowing.

For a few weeks SNIAS [National Industrial Aerospace Company] was upset that France might be making less of an effort than its partners although it wanted to be a leader in this project. Yesterday Charles Fiterman publicly dismissed these accusations: "At no time has the national company had any problems; it could even have financed the preliminary work much more easily than its partners, and this will be the case in the future," the Transportation minister assured. "You can't tell the government to mind its own business when things are going well and then, when things go badly, say it's all the government's fault and ask for help." It was a clarification in the form of a warning.

8782
CSO: 3698/404

OLIVETTI READY TO COMPETE, INTRODUCES IBM-COMPATIBLE PC'S

Copenhagen BERLINGSKE TIDENDE in Danish 16 Apr 84 p 12

[Article by Karin Kaas, London: "Olivetti Arms Itself to Take a Stand Against Giant IBM"]

[Text] The biggest European-owned office machine and computer equipment manufacturer, Italian Olivetti, is sniffing the morning air after having entered into collaboration with the world's largest telecommunications firm, American Telephone and Telegraph, and now regards itself ready to compete with IBM.

I have it! We invite the whole bunch of journalists to London for two days. This will have to give something to mention, and then things will start flapping.

One could well imagine a conversation about like this in Olivetti's management office before the firm's launching of two new personal computers (PC's)--a portable and a stationary. The facts are that the soup plate /has/ [in italics] been invented--also in the personal computer field--and that the various products are gradually becoming hardly distinguishable. In any case, the advances are not of an order of magnitude which will immediately move market shares or clear the front pages of newspapers.

And the share of the market is what it is about. The PC market is crowded. Ten large manufacturers share about 80 percent of the rapidly growing market, while no fewer than 240 are fighting for the remaining 20 percent. At the same time there is talk of a growth market without parallel.

The latest analyses show that the European professional PC market grew about 50 percent last year, from 300,000 units sold in 1982 to over 450,000 in 1983. With West Germany, Great Britain, France, Italy and Spain as the main markets, with 75 percent of the total.

At the same time there is a trend toward lower prices, and this means that only those manufacturers which can produce at low prices and in large numbers will survive.

It is in this context that Olivetti's big planned world launching of the new PC's is to be seen. One hundred journalists from most European countries and from countries as far away as Australia and Canada were recently called to London for a presentation of Olivetti's IBM-compatible personal computers--the M21 and M24. The many press people were served the history of the only a few years ago economically ailing Italian office machine and computer equipment concern, which after a marriage with the world's largest telecommunications company, American Telephone and Telegraph (A T & T), feels prepared to take a stand against the remaining manufacturers.

"We will be among the few winners who will exist in the market in a few years," Olivetti's International Marketing Director V. Casoni said, and he based his optimism on the fact that Olivetti in his opinion is fulfilling a number of criteria which are necessary in order to hold one's own in the competition. He named, among other things:

A solid financial basis in order to overcome the problems in a highly competitive market and to meet the challenges the intense development presents.

The ability to operate not only in the individual PC market by using standard marketing channels like computer stores, for example, but also in the enormous potential market for personal computers, i.e., where PC's will be used as work stations integrated in office automation systems.

Sufficient resources to utilize the most advanced technology in order to be able to offer competitive products and to lower development and production costs.

Wide circulation in the most important international markets, which is necessary in order to achieve a high sales volume.

"It is characteristic today that computers are sold not only by virtue of their technical specifications. It is decisive for there to be a connection between computer manufacturers, software sellers and the distribution network," V. Casoni says. "And the firm which can offer the correct PC 'marketing mix' will be successful."

This mix includes a range of products which together cover the needs of PC users. That these products use industry standards (i.e., are IBM-compatible), and thereby products which can directly use a wide range of "shelf software." At the same time the products must differ from the competitors' but maintain the same price level. The requirements for the distribution network are, according to Olivetti's marketing director, selected professional dealers each of which especially is nationwide and which can meet the requirements of large and medium-large organizations when they buy PC's as intelligent work stations.

Olivetti has made allowance for the last point by setting aside 25 million dollars this year alone in order, using a Casoni expression, to "give users the opportunity to choose Olivetti over others." And expectations that they will do this are so great that a share of 10 percent of the European PC market this year and 25 percent in 1985 is being budgeted for.

Hear How We Rumble

"'Hear how we rumble,' the mouse said to the elephant when they crossed a bridge together." This is the tale which first comes to mind with Olivetti's declaration that it is now ready to take a stand against the market leader, IBM. It is certainly true that Olivetti is now No 2 in Europe after IBM, but IBM casts long shadows. Last year IBM reached sales in Europe which the firm's 10 closest competitors had to pool themselves in order to achieve, and sales were almost seven times greater than Olivetti's.

But collaboration with A T & T has given Olivetti more weight behind its moves. A few days before Christmas A T & T and Olivetti announced that the two firms had entered an industrial, commercial and financial alliance which includes joint product development, distribution and technological collaboration. A T & T bought 25 percent of Olivetti's stock for 260 million dollars. At the same time the American concern is to purchase Olivetti products for another 250 million dollars over a 12-month period. Included in the agreement is that A T & T cannot increase its share of Olivetti's stock the first four years and after that can own a maximum of 40 percent.

Carlo de Benedetti, the chairman of Olivetti and the firm's real owner, has described the new partnership by saying that "it is the only alliance which will put Olivetti in a position to compete with IBM globally."

The agreement entails the fact that Olivetti is to market A T & T's products in Europe. This is true also of A T & T's first try at the computer market--six 32-bit minicomputers at prices from around 30,000 kroner and 3.4 million kroner.

The Danish Olivetti firm will, for instance, also be in charge of the sale of A T & T's products, but first in a year's time as far as minicomputers are concerned. Olivetti's new personal computers will be on the market in May as far as the stationary M24 is concerned, while the portable M21 will come on the market in September. Prices for the two PC's will be very close to IBM's prices for the equivalent products.

8985
CSO: 3698/387

SIEMENS PLANS 256 K MEMORY CHIP TO CATCH UP WITH JAPAN

Oslo AFTENPOSTEN in Norwegian 19 Mar 84 p 27

[Article by Ulf Peter Hellstrøm: "Siemens Project Recently Approved: Billions Into New Electronics"]

[Text] Villach, Austria, 1 March--The Siemens concern is planning to use DM 1.4 billion over the course of the next five years in order to develop and produce silicon chips which can store one and four million bits of information. The big West German concern is now struggling to catch up with the Japanese market leaders in the development and production of the small electronic building blocks which are now in such great demand the world over. The production of so-called 256 K chips is to be begun in the near future in Villach in Austria.

The Siemens concern recently made a decision to invest great resources in the development and manufacture of the small silicon pieces, or "chips." The company is building up a staff of 300 researchers and engineers. In addition to development costs, the budget of DM 1.4 billion, or about 4 billion Norwegian kroner, is also to cover the construction of two pilot installations and two production facilities. The production facilities are to be added in Regensburg in West Germany. The prototype of the first megabit chip is to appear sometime in 1986.

"This is a strategic decision for the company. Siemens must hold its own among the international front runners in order for the company's independence to be preserved." This was said by Wolfgang Spalek, the head of the existing production facility in Villach.

Siemens is probably already too late in comparison with the big Japanese companies which have the reputation of being market leaders in the production of the tiny memory chips included in computers. Japan and the USA have dominated the world production of silicon chips. While the USA still has the lead in the development and production of microprocessors, which are the computing parts of computers, the large Japanese conglomerates like Hitachi, NEC and Toshiba have advanced in the big market for memory chips.

The 64 K chip was put into mass production at the end of the 1970's, and this chip has gradually replaced the earlier 16 K chips. This designation states that the older chips can store a good 16,000 bits of information. As a rule, it takes eight such bits to store a character, letter or code. If you imagine a typewritten page with 2000 characters, it will be able to be stored in a, rather precisely, 16 K chip. Accordingly, a 64 K chip will be able to store four such pages.

Japan now has a share of the market of about 70 percent in the production and sale of these 64 K chips. During the current year mass-produced 256 K chips from Japan will be on the market. Here, too, it looks like Japan has a lead of a few months over its competitors. The greater the capacity of each memory chip, the more squeezed together become the individual transistors which make up the integrated circuit on the silicon chip, and the more costly and advanced the production facilities become.

The next generations of memory chips for one and four million bits of information will probably be available in a couple of years. Even with such advances in digital technology it is a long way to the organic memory which ordinary people are endowed with: The average brain should have, we think, a theoretical capacity of 62.5 million typewritten pages, or one million [as published; should be Billion] bits of information. Other storage media come closer to the brain in capacity: A video disk can in theory store 9.4 million typewritten pages.

Europe's role in the production and sale of the silicon-based electronic building blocks has traditionally been limited. The biggest European manufacturer is Philips, which has entrusted its "chip" production to its subsidiary Signetics in the USA. Siemens has 22,500 people employed in its production of such components. Sales last fiscal year were about $880 million, or about 7 billion Norwegian kroner. Between 25 and 30 percent of its production is for its own consumption, while big outside customers include, among others, IMB [as published; should be IBM].

The Siemens facility at the railway junction of Villach in South Austria consists not just of a production facility providing work for 940 people. In addition, the company has put a development center for microelectronics at the spot. It is led by Director of Development Günter Sandner and consists of about 60 engineers. Some of these will probably be enlisted for Siemens' stake in the next generation of electronic components.

The production of various types of silicon chips is an everlasting fight against dust. A tour of such an operation is limited to walks through corridors which encircle the production areas themselves. The labor force working in the so-called "clean rooms" is viewed through windows. Personnel must change clothes before they enter the production areas. During these proceedings, before one enters the Holy of Holies it is necessary to put on hospital-like attire including surgical masks and gloves. Vacuum cleaners are often used in the dressing rooms in order to pick up stubborn dust specks.

By means of photolithographic processes a pattern of conductors is placed in a thin layer on the individual silicon wafers, which are cut up into small chips. The number of transistors on each chip has now reached hundreds of thousands. A 64 K chip consists, for example, of at least 150,000 transistors. On the basis of one transistor per bit of information which is to be stored, the new 256 K chips will require a pattern of at least a quarter million transistors.

When so many transistors are to be squeezed onto a chip that they take up a surface area of several square kilometers, the space is quite confined. The distance between two conductors today is down to 2 µm, or two thousandths of a millimeter. Any dust particles which stray into these patterns will destroy the integrated circuit. It is this which manufacturers must take their costly precautions against.

"We attach decisive importance to mastering the mass production of memory chips. If we do this we will also master the mass production of logic components like microprocessors, for example," Spalek says. The Siemens plant now manufactures several types of microprocessors under license from the American Intel company, which developed the 8088 processor which runs IBM's market-leading personal computer.

Like other manufacturing facilities, the Villach plant can report an enormous demand for components. The waiting time for customers is now up to several months or up to a year. Production at the plant goes on in round-the-clock shifts seven days a week. Almost as many women as men work for the concern. Women are not permitted to work at night in Austria.

"We are aiming at beginning the mass production of 256 K chips in the first quarter of next year," Sandner says.

8985
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SIEMENS STRATEGY INCLUDES DM 1 BILLION FOR SUBMICRON IC'S

Duesseldorf HANDELSBLATT in German 6/7 Apr 84 p 17

[Article: "A Billion for Microelectronics"]

> [Text] dck Hanover. The Siemens Company has just initiated a research program and investment program for microelectronics in order to improve its position in stiff competition with other semiconductor manufacturers--all condemned to keep pace with a furious rate of progress. In a press conference at the Hanover fair it was announced that this project aims at securing a front position in the technology of the most highly integrated circuits.

In the first half of the current fiscal year Siemens achieved a 6-percent growth in sales. Domestic sales increased by 13 percent. Since 1 October 1983 the number of Siemens employees has for the first time shown a steady advance after some years of retrograde development. In the current year the number of hirings of engineers and scientists will double.

Research and development in the entire Siemens concern have been subjected to a critical examination. Prof Dr Karl Heinz Beckurts, head of the Central Division for Technology and member of the Siemens board of directors, reported that "very unorthodox measures" for increasing research efficiency have come out of this critical examination.

Since 1983 at the "management levels" of the company seminars have been in progress in which the aim has been to achieve a consensus with regard to acceleration of the process of innovation. Up to now 700 members of the firm have participated in this. At Siemens 30,000 employees are active in research and development; last year expenses in this area amounted to 3.5 billion DM. Four focal points are envisaged for the eighties and nineties. These include an increase in office productivity, integration of communications equipment, automation of manufacturing and safeguarding the energy supply.

In office technology two-digit growth rates are expected in coming years. In the area of energy technology and automation technology Siemens created an entirely new division of business. Its products aim at making it possible

for companies to increase productivity, improve the quality of products, shorten contract fulfillment times and enhance flexibility. Since the level of automation in manufacturing is going to increase considerably Beckurts expects growth rates of more than 15 percent annually for linked, flexible manufacturing systems.

In order to achieve these four goals of its business policy Siemens must master certain key technologies. These include primarily microelectronics. Within the framework of the new research program (volume "distinctly" greater than 1 billion DM) in Munich-Perlach a pilot line is being set up for the most highly integrated circuits having structures around and less than 1 micrometer in size. In Regensburg there is planned a factory for the mass production of 1-Mbit memories. In the Villach/Austria semiconductor plant 256-kbit memories will go into mass production in 1985. Two years ago a form of bilateral cooperation was initiated with Philips in the areas of semiconductor technology, submicron structures, computer-supported design and speech recognition. By the end of the decade it is expected that a 4-Mbit memory component will be achieved in CMOS technology. Beckurts said that at Siemens industrial cooperation is an established feature of its business policy and he named as partners Intel, Fujitsu, Bull and ICL.

A further key technology is optical communications technology. Optical systems having transmission rates of over 560 Mbit/sec are now state of the art. Siecor, an organization founded together by Siemens and the American Corning Glass Works, has an order for 165,000 km of fiber in the United States and is thus the second largest manufacturer after Western Electric.

8008
CSO: 3698/376

DESCRIPTION OF FRG BASIC RESEARCH IN X-RAY LITHOGRAPHY

Hamburg DIE ZEIT in German 23 Mar 84 p 31

[Article by Franz Frisch: "Electronics: In X-Ray Lithography the Germans Are Among the Front-Runners--The Chips of the 1990's: Smaller Switching Circuits for Supercomputers Can Be Manufactured Only With the Aid of X-Rays"]

[Excerpts] In the production of electronic components the FRG today lags far behind the United States and Japan. But this does not mean that Germany has therefore permanently lost all chance of catching up. Because the supercomputers which are expected to emerge in the nineties involve basically new manufacturing techniques in contrast to previous developments. And in this most advanced phase of microelectronics the Germans appear not only to have responded promptly but they even seem to be a driving force.

The imaging of extremely small structures by ultraviolet (UV) light is already impaired by the smallest dust particles so that human beings, who are carriers of the greater part of such impurities, must be eliminated from the manufacturing process. Production can be carried out only under extremely dust-free conditions and therefore must be fully automated. But in addition the optics required for imaging the smallest structures enormously increases the engineering outlay. Therefore many experts are of the opinion that the 4-Mbit chip is probably the final memory component which can still be produced by conventional optical techniques.

Nevertheless, experts do not see any physical reason or any engineering or economic reason why silicon switching circuit technology should not continue to develop at undiminished speed during the nineties. For the increasing problems of optical technique can apparently be overcome by an alternative technology. The principle of this alternative is this: The microscopically small structures on the semiconductor are drawn not only by means of light but by means of X-rays which have a much smaller wavelength.

Even though defenders of visible light optics are skeptical nevertheless this new procedure offers to the Germans a good chance of competing with Americans and Japanese. Because if semiconductor technology is to be put on an X-ray basis this means that after two decades of rapid technological advance the researchers must practically start all over again. From the radiation source, through masking technique, through the technique of the resist (the light-sensitive lacquer on the silicon chip which makes it possible to etch the

imaged structures into the semiconductor material) X-ray lithography must be newly developed.

"When we started 7 years ago we were still looked upon by many experts as something exotic," recalls Anton Heuberger of the Munich Fraunhofer Institute for Solid-State Physics. With the support of the German Federal Ministry of Research and of the Fraunhofer Society he has been concentrating upon X-ray lithography as early as 1977 when he was 35 years old. At that time this was a risky undertaking. Because at that time the new technology had prospects of success which lay entirely in the dark. And besides only a high expenditure of personnel and money promised any progress.

The electronic researchers were lucky: for a long time the German Federal Government and the State of Berlin had been planning the construction of an electron accumulator ring for synchrotron radiation (BESSY), a laboratory which was originally planned for basic research in physics. The synchrotron radiation arises in the accelerators and accumulator rings of the high-energy physicists. There whenever electrons approaching the speed of light are forced into curved trajectories by strong magnetic fields they radiate light which is extremely intense--the so-called synchrotron radiation. This radiation leaves the accumulator ring tangentially; in other words in approximately the direction in which the electrons would have moved in the absence of deflection.

Because the synchrotron radiation produced in the BESSY contains a lot of X-ray radiation the suppliers of public funds seized the opportunity and designed the Berlin ring for X-ray lithography: About a quarter of the laboratory area was reserved for research in the new semiconductor technique.

In the meantime about 50 million marks have been invested in X-ray lithography--not a great deal but nevertheless enough to finance the largest research group outside of Japan. Heuberger's Berlin "Microstructure Technology Division" of the Munich Fraunhofer Institute includes in the meantime 40 workers including guest scientists and is expected to grow still further.

BESSY and the Berlin group may be looked upon as a good example of direct support of future technology on the part of the national government: for the first time in the FRG the German semiconductor firms have come together with state aid to jointly research a new technology. Siemens, AEG-Telefunken, Valvo and Eurosil are already participating--coordinated by the Berlin research group--in the development of X-ray lithography.

The competitors must be taken seriously. In Tokyo the Electrotechnical Laboratory (ETL) which is Japan's famous computer research center having over 700 workers and about 100 million marks' annual endowment is in charge of research. And in the United States it is primarily IBM and the Bell Laboratories which are concentrating on the new technology.

Development of X-ray lithography is extremely tedious because X-rays fail to possess many characteristics which can be effectively used in the case of visible light. Thus for lack of optical lenses there is practically no way

of projecting a reduced image of a mask onto a semiconductor. The mask must be manufactured in its final dimension, in other words it must contain structures which are as microscopically small as the finished chip.

Here lies the first big hurdle to be taken by researchers in the new technology: How can structures which are only a ten-thousandth of a millimeter in size be drawn? This is possible using electron beams or ion beams. Drawing with the electron beam is in fact a technique which has been used for a long time. Nevertheless, the researchers are still far from being able to use this technique in X-ray lithography. Because the electron beams are still not accurate and stable enough to draw the tiny structures cleanly and faultlessly on the mask.

Because X-ray optics are not available the researchers have in addition to mask technology still a second difficult hurdle to deal with: that of the light source. The latter should be intense and should uniformly illuminate a specific area with rays which are as parallel as possible. In the case of visible light this may be done with the laser ideally since the laser beam can be broadened by means of a lens system. In the X-ray domain, however, there is neither an ideal source of parallel irradiation nor are there suitable systems for uniformly distributing the rays. X-ray light must be used just as it comes from the source.

Therefore the conventional X-ray tube scarcely has any chance in future chip manufacture. Since its rays emerge from a relatively large focus in various directions it casts only unsharp shadows--differing thus from synchrotron radiation. The synchrotron radiation is released in almost parallel rays and may be optimized with respect to intensity ("brightness") and wavelength for use in X-ray lithography.

For a broad application of synchrotron radiation to the manufacture of electronic switching circuits today's large research installations are certainly much too expensive (an initial suitable laboratory attached to the "Doris" accumulator ring of the German electron synchrotron--DESY--in Hamburg has been in operation since January 1981 under the name "Hasylab"). The industry needs compact accumulator rings which are designed solely for lithography and therefore can be much smaller and cheaper.

On Heuberger's recommendation a study has been undertaken at the Technical University of Munich which serves as the basis for the development of a compact accumulator ring, in progress since 1982, by DESY and the Fraunhofer Society. Up to now the Berlin research group has been the only group in the world to embark on this undertaking. The electron path of the small accumulator ring, into the development of which there have already been invested more than 10 million marks of public funds, is to have a radius of a little more than 40 cm. The ring will begin to produce radiation experimentally as early as 1985.

Mass production of highly integrated computer chips by means of X-ray lithography is expected to start as early as the first half of the nineties. In order that up until that time German development capacities shall be fully

exploited the German Federal Research Ministry has now designed a broad "submicron" ("smaller than a micrometer") funding program in which more than 100 million marks will be invested during the next 5 years. Thereby all research institutions which can contribute to the development of the new technology are being linked together with a common concerted goal in a working association which has already been in existence.

In the meantime together with four semiconductor firms the Berlin group is preparing the development of future industrial manufacturing. Since last year for this purpose there has arisen on the BESSY site a modern 600-square-meter clean-room laboratory. It is to start operations in 1985.

Are alternatives to the X-ray chips conceivable? It is possible in the opinion of experts that for the computers of the future it will not be necessary to employ the smallest possible structures because the switching circuits in the future will grow out of the planar region and form three-dimensional structures. And this could also be done by means of visible light optics. For this reason at the ETL in Tokyo there is also already a group working with three-dimensional switching circuits.

8008
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SCIENTIFIC AND INDUSTRIAL POLICY

FRG TO SUBSIDIZE CAD, ELECTRONICS, COMPUTERS THROUGH 1988

Munich COMPUTERWOCHE in German 23 Mar 84 pp 1, 6

[Article by Claudia Marwede-Dengg: "Bonn Gives Final Blessing to Support Program for Information Technology"]

> [Text] After a delay of more than three months the Federal Government has finally released the "Government Report on Information Technology", heralded in May of last year. As expected, the Federal Ministry for Research (BMFT), which was responsible for developing the 33 point program, has earmarked about 3 billion marks in its budget for subsidies. Rather unexpected, on the other hand, is the planned formation of a "high-ranking commission for postal and telecommunication matters", charged with contemplating a new structure for the Federal Postal Administration.

Federal Minister for Research Heinz Riesenhuber admitted before the press in Bonn that "protracted discussions" between his office and the Federal Ministry of Economics had been responsible for delaying completion of the report. Meanwhile, there is unanimous agreement among all the participating institutions which, in addition to the Ministry of Research and the Ministry of Economics, also includes the Federal Ministries of Defense, Education, and Post and Telecommunications. The focal point of the financial support of the Federal Ministry of Research is the allocation of 1.39 billion marks for component technology--320 million marks for the "special program for micro-peripherics [sic]"; 90 million each for "computer aided design (CAD) for integrated circuitry" and for "crypto components"; 600 million marks for a "submicron project"; 200 million marks for "new component parts technology"; and 90 million marks for "integrated optics".

The total of 520 million marks allocated for "electronic data processing" are distributed as follows: 160 million marks each for "computer aided design (CAD) for computers and software" and for "new structural computer designs", and 200 million marks for "information processing and pattern recognition". For industrial automation, the third critical area of the research support program, a total of 530 million marks has been designated.

Beyond that, the Riesenhuber ministry will provide 100 million marks each for basic research and for the planned German Research Net (DFN), 260 million marks for "broadband integrated services digital networks [ISDN] and optical communication technology", and 60 million marks for high-resolution television. Altogether, the research minister hopes that his infusion of 3 billion marks will trigger additional investments of 7 to 10 billion marks.

The Federal Government also wants to contribute to an "improvement of the economic market environment" through additional peripheral actions. These encompass, e.g., "an innovative governmental procurement policy", to be achieved through the pending modernization of the system by which contracts are awarded--with the exception of construction contracts--and a policy of requiring disclosure of interface and communication processes. "The Federal Government," according to point (4) of the program, "will... , when soliciting bids for proposals, insist that products and interfaces either use official standards or that the bidder offers suitable interfaces with the information needed to connect to, or couple with, products of other manufacturers."

In the "Technical Communications" section the report concerns itself in detail with the German Federal Postal Administration and its importance, on the one hand, as an authority for setting standards and, on the other, as a major public consumer. Consequently, "as a basis for a development program for the expansion of technical communication systems", a medium-range program for five years as well as a long-range outlook for 10 years is to be worked out in the "Schwarz-Schilling" house.

With regard to the "development of the integrated services digital network (ISDN)", the report states that the post office intends to test ISDN beginning in 1985 and to introduce it, initially in commercial centers, in 1987. ISDN is to be made available throughout the Federal Republic not later than 10 years after its initial introduction. The postal service will "create the conditions for development based on demand"; as far as it can be estimated today, a demand for 3-4 million ISDN connections can be expected by 1995.

In addition--according to point (13): "Broadband ISDN and Optical Communication Technology"--the earliest possible start is to be made, as far as can be determined today, at the latest two years after the introduction of ISDN, with development of the long-term installation of the broadband ISDN system geared to demand and profitability, so that broadband services can be made available to a large number of ISDN participants by 1995."

Beyond that, the post office will introduce glass fibers into its long-range communications net in line with technology and commercial availability applicable at the time, thus promoting a smooth transition from copper cables to glass fiber cables in the communications network. The Federal Postal Administration will prepare "a basic quantitative concept" within a year.

Finally, the Federal Government did not fail to make a statement regarding "Monopolies and Competition in the Telecommunication System" in its program for information technology. Point (17) comments on terminal equipment policies: The German Federal Postal Administration will continue its liberal licensing policies with regard to terminal equipment and permit the connection of all terminal equipment to... (the) telecommunication netw which, on the basis of product testing, meet the licensing requirements and for which qualified maintenance can be guaranteed." The Federal Government will examine how the most liberal conditions possible in the future market for terminal equipment can be assured.

Structure of the Federal Postal Administration Scrutinized

The cabinet will also determine "whether a new structure can be found for official government business and managerial tasks of the German Federal Postal Administration, capable of responding more rapidly to technological, economic, scientific, and political developments." The Government will therefore appoint a high-ranking commission to be composed of representatives from the areas of commerce, science, and politics. This commission will be asked to prepare a report on these questions by the end of 1985 which will also take developments in other countries into consideration.

12628
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SCIENTIFIC AND INDUSTRIAL POLICY

THIRD VENTURE CAPITAL COMPANY FOUNDED IN BERLIN

Frankfurt/Main FRANKFURTER RUNDSCHAU in German 11 Apr 84 p 9

[Text] A third company to supply risk capital for innovations has been founded in Berlin with the mission of promoting young technology-oriented enterprises. WBB (Economic Associated Company Ltd. Berlin)--
as Wolfgang Steinriede, member of the board of directors of the Berlin Bank described it--has "five unequal fathers": Nixdorf Computer, Standard Elektrik Lorenz, Hannover Finanz, Berliner Bank, and Commerzbank.

With a capital stock of M10 million which all partners are to supply in equal parts, in-house capital, put up as security, is to made available for innovative enterprises working toward the technological development and structural improvement of Berlin industry. Jobs are to be created in this way and medium-size industry is to be promoted. In addition, the two banks are providing credits in the amount of DM20 million. This amount would be used to grant loans for further operating resource promotion, on which the interest is 1 percent lower than on regular bank loans, said Steinriede.

Cooperation between banks and industrial enterprises with technical knowhow and marketing experience would reportedly guarantee the expert judgment of the chances of innovative enterprises on the market, something for which the business expertise of the banks sometimes is not enough, commented Steinriede.

Berlin economy senator Elmar Piroth points out that WBB is the third "venture capital" company to be founded in Berlin. As of now, 17 enterprises, including ten newly founded firms, were given support in this fashion. Among other things, they turn out microelectronics products and industrial robots.

Pieroth [as published] emphasizes that the new company does not imply the creation "of any new subsidy taker." The government innovation fund instead could gradually withdraw from its activities.

The promotion of young, technology-oriented enterprises represents the center of gravity of the "labor market and structural program" of the Berlin economy senate. The idea is not only to strengthen the international competitiveness of German industry but above all the idea is to deprive the Berlin economy of its character of an "lengthened work bench."

An attempt has been made only too often, according to the economic senate, "to make work benches a little longer or to postpone the necessary discarding of a work bench for a few months." "Unprofitable enterprise divisions were preserved against all rules of reason and at the expense of the entire economy as a whole instead of modernizing them at the right time and heavily emphasizing quality and new equipment."

In addition to government promotion measures from Berlin budget funds and above all subsidies from the Federal Research Ministry, "venture capital" companies are participating in technology-oriented firms with real risk capital.

The venture capital promotion model comes from the United States. The supply of long-term risk capital is combined here with entrepreneurial care and backup. The money donor risks total capital loss but also has an opportunity to make big profits if the enterprise is successful. The profit expectation can be fulfilled as a rule at the very earliest after 5 years. In some cases, the money donor already cooperates during the production concept and during the market analysis by making "seed capital" available. If the production idea is a hit, then there are additional expenditures for the purpose of founding enterprises, for preparation, start, and sale of industrial production.

Success on the market often means that considerable growth--which not infrequently can be ten times and more the annual sales increase--will have to be financed. In the United States, the investment volume in the meantime has risen to about $8 billion, distributed over more than 600 venture capital companies. A capital glut is already emerging in the United States because of profit expectations. European enterprises with a need for venture capital are thus increasingly turning to the American market. This "flight movement" is also a reason for the origin of a German venture capital market.

5058
CSO: 3698/380

NIXDORF, SEL, THREE BANKS FOUND BERLIN VENTURE CAPITAL FIRM

Frankfurt/Main FRANKFURTER ALLGEMEINE ZEITUNG in German 7 Apr 84 p 16

[Text] WBB (Economic Associated Company Ltd. Berlin). The venture capital company is supplying equity capital amounting to DM10 million, to begin with; this company has now been founded jointly by Nixdorf Computer AG, SEL [Standard Elektronik Lorenz], Hannover Finanz Gmbh, as well as Berliner Bank and Berliner Commerzbank. The two banks moreover provide a loan ceiling of 20 million, initially, from which cheaper operating equipment loans can be granted. WBB is the third risk capital company to be established in Berlin within 8 months.

It was said that WBB does not want to exert any influence on the company policy of the partners but could possibly offer management consultation above all in the commercial area. This was also the reason for the involvement of "Hannover Finanz," a subsidiary of the Liability Insurance Association of German Industry which itself is a kind of venture capital company and in the process achieves a definitely higher yield than in the case of the usual insurance-style money investment. Hannover Finanz also supplies the "business manager for company establishment" of the new enterprise in the form of its board of directors member Albrecht Hertz-Eichenrode. All five parent companies will be represented in the partnership committee with one seat.

WBB--which will become operational already in May in an office on Kurfuerstendamm--above all wants to participate in firms which are being managed by one of the partners himself. The firms should "have at least indirect relationships" with the city. "One must advise business operators to go to Berlin because they will never get a better place for their businesses," commented Hertz-Eichenrode in this connection. SEL board of directors member Thomae explained the commitment of industrial enterprises to the venture capital company among other things by saying that certain ideas and inventions can be better materialized outside big concerns. Besides, the idea is to learn "how one can survive as an individual enterprise." But, just the same the five parent companies left no doubt that WBB will be managed in a profit-oriented fashion.

In the opinion of Berlin economy senator Pieroth, WBB is further evidence of the "founder scene" which has arisen in the city in the meantime. Pieroth rejected tax benefits for venture capital companies just as much as "a fourth segment at the stock exchange." Instead, it is necessary to make regulated unofficial dealings more transparent.

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BRIEFS

ERICSSON FLOATS RECORD LOAN--Ericsson is floating a bond loan of 500 million kronor, the hitherto largest industrial loan from a Swedish enterprise. The funds will cover the general investment needs of the enterprise. Ericsson is not taking this enormous loan because of any lack of funds but because the company wants to take action while the market is liquid and it is easy to borrow money. The interest rate is 11.55 percent, the loan matures in the year 2004, and the interest rate will be adjusted every 4 years. The denominations of the bonds are 10,000 kronor, 100,000 kronor and 1 million kronor, and purchasers of the bonds will primarily be institutions, like National Swedish Pension Insurance Funds. [Text] [Stockholm SCIENCE & INDUSTRIAL POLICY in Swedish 5 May 84 p 8] 7262

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ADVANCED SOFTWARE STOLEN FROM WEST FOR SALE TO EAST

Stockholm DAGENS NYHETER in Swedish 6 Apr 84 p 5

[Article by Rolf Stengård]

> [Text] Via a number of Swedish citizens, an East-Bloc country has ordered the theft of advanced computer programs from the West. The Swedes have seen to it that the programs which constitute entire systems for production of advanced technological articles are copied illegally in several different countries in the West.
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> The National Swedish Police Board is now examining thousands of data programming copies intended for shipment to the East Bloc against payment of large sums of money.

The investigators do not know how much stolen software has already reached those who have ordered it.

In raids at six different locations in Sweden, among other places in Stockholm, a total of well over 10,000 copies of advanced data programs have been seized.

According to information received by DAGENS NYHETER, these programs constitute entirely completed systems which, if used together in so-called CAD/CAM systems, may be used for an effective production of advanced technology articles.

These articles are stated to have more of a military application than a civilian application.

Worth Millions

In one of its investigations, the National Swedish Police Board is examining 7,000 programs which form part of one single order from the East Bloc. The programs supplement one another and are ready for use in production.

The programs are worth millions of kronor.

They have been stolen through copying in enterprises in the United States, West Germany, Norway, Great Britain and other countries in the West.

So far there has been nothing to indicate in the investigations that programs of Swedish enterprises as well were copied for resale to the East Bloc.

The seizures of data programs were made in raids during the summer of 1983 as well as this spring. The most recent seizure took place as late as last week.

"There is no doubt that it is a question of definite orders," a source within the National Swedish Police Board tells DAGENS NYHETER.

"It may be compared to an order placed by a fence with a thief."

However, he does not want to reveal which East Bloc country is behind the orders, only that it is not the Soviet Union.

Good Contacts

It is not clear how many Swedes have been involved in the traffic in stolen software to the East Bloc. The investigation is still at a very early stage. One of the suspects has been in custody but was released.

Among the suspects are data programming consultants and representatives of programming stores in Sweden. Also minor Swedish computer enterprises without any production of their own are among the suspects.

They often have very good contacts with the large computer enterprises abroad and, therefore, have been able to obtain the articles ordered without any major difficulties.

According to the investigators, the violations, if any, committed by the Swedes, are data infringements. However, they stand a good chance of escaping criminal charges in Sweden, especially because the illegal copying of the data programs has taken place abroad. It is, moreover, very difficult in most cases of data thefts to establish that a violation of the law has, indeed, taken place.

"Nor is it entirely certain that the Swedes carried out the very copying. They have received the orders and have passed them on to contacts in other countries," sources within the National Swedish Police Board state.

A tax review of the persons in question will, however, be undertaken. The markets are subject to import licenses, and technology transfer from the West to the East on which the United States has placed an embargo is very lucrative.

The suspicions with regard to the extensive traffic in software grew in conjunction with the so-called computer affair last summer.

War Materiel

At the time, the police seized a large quantity of computer equipment in containers, the contents of which was subsequently classified as war materiel

and which the police suspected was intended for transfer to East Bloc countries.

The software seized from the key person involved in that affair, however, is not included in the investigation into the thousands of seized programming copies.

Already before that affair, the United States had announced stiffer sanctions against customers in the West who do not take a firm hold of American technology with a view to preventing advanced technology from being transferred to East Bloc countries.

Consequently, also this investigation into stolen software is a very awkward matter for Sweden, which is already subject to close scrutiny on the part of the United States following the disclosure that Sweden had served as a transit country for advanced technology to the East Bloc.

"It is incredible that this type of industrial espionage should occur to such an extent. It keeps increasing," says the source of DAGENS NYHETER within the National Police Board.

"Just within the past 6 months, thefts of desirable software which requires vast costs to develop, have increased enormously," he says.

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END