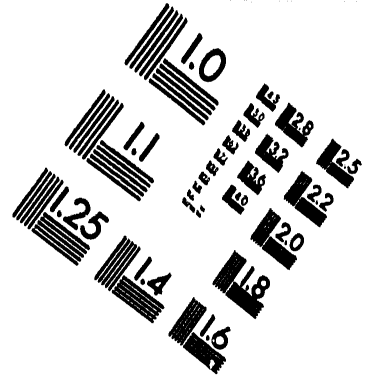
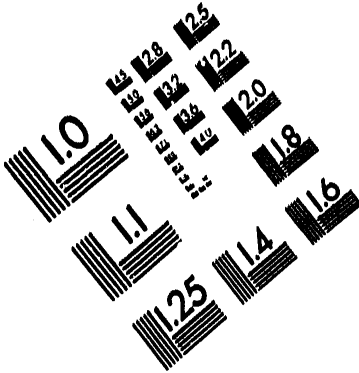


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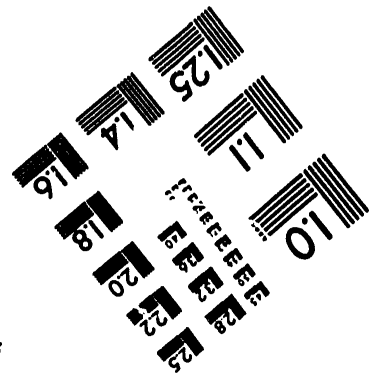
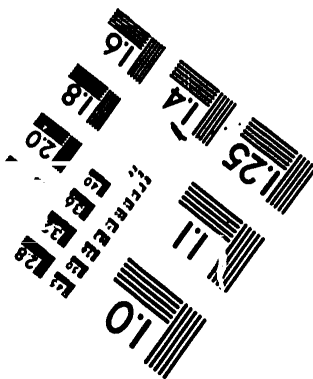
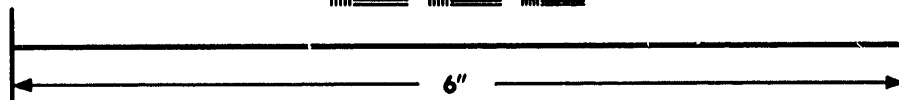
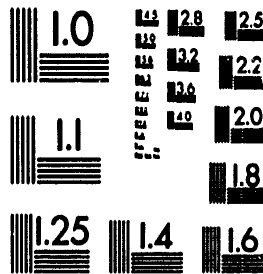
3 APRIL 1979

(FOUO 5/79)

1 OF 1



**IMAGE EVALUATION
TEST TARGET (MT-3)**



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3 April 1979

TRANSLATIONS ON TELECOMMUNICATIONS POLICY,
RESEARCH AND DEVELOPMENT
(FOUO 5/79)



WORLD

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3 April 1979

TRANSLATIONS ON TELECOMMUNICATIONS POLICY,
RESEARCH AND DEVELOPMENT

(FOUO 5/79)

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JAPAN

FUJITSU, HITACHI, NEC OUTLINE COMPUTER STRATEGY FOR THE 80'S

Tokyo NIKKAN KOGYO SHINBUN in Japanese 10, 11, 12 Jan 79

[10 Jan 79, p 15]

[Text] Fujitsu

IBM plans to announce world-wide sales plans for its "E series" computers "Maya" and "Inca" (developmental names) along about the end of this month. During the past few years IBM has been receiving good response to its sales program on the "303X series" of superlarge machines, and this is the background for its entry into a physical battle that involves length and breadth assault on the price policy. Of particular note is the "E" series" whose cost performance is claimed to be four-five times better than that of machines of the past, and its targeted rivals areas seem to be the PCM (plug convertible makers) and the Japanese computers.

At the same time, lying at the very base of this program is the promise to convert any machine to what the user side requests under the motto "no matter what make, where, or who is in need of conversion will be accommodated." To be sure, this program has been developed with the 80's in mind where the computer is expected to enter into all phases of economic and social activities, and IBM's share of the pie will be increased accordingly.

The domestic computer makers who find themselves in the trough between computerization and this IBM assault are presently planning to unveil some new plans. This pathway is not smooth and consists of a series of thorny trails. With this in mind, a study was made of the three leading computer makers of Japan who are being buffeted by this IBM assault to observe their development of machines to counter this E series units, software countermeasures, and overseas strategies.

"The preliminary skirmishes to the Battle of the 80's have begun. IBM has initiated its wide and global scale strategy" (Shoichi Akazawa vice-president). "An IBM typhoon with wind velocity of 40 meters is

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approaching, and all we can do is to brace ourselves and do our best" (Teiji Makikawa vice-president). "This is the make or break year" (Ichiro Hashi director). These statements from the hierarchy of Fujitsu reveal the importance of this all important decisive conflict with the E series.

The counter strategy of the domestic makers is not clear at this stage when the entire outline of the E series strategy is not yet definitely known, but the thing the domestic makers fear most is an extraordinary lowering in cost by IBM. If, for example, one considers that the System 8100 that has been dubbed "the machine to raise the curtains to the 80's" costs but one-tenth of its predecessors on mere price, one would expect that the cost of the E series would follow the trend and ride on the same price curve. Here one can cite the confrontation between IBM and the American antitrust laws which resulted in IBM receiving silent assent to its claims that it was not causing any definite damage such as industrial dismemberment, and IBM has been developing its strategy against the rapidly developing PCM industry (plug compatible makers) and the Japanese sphere.

There is a special effort to maintain this price operation in full force against the three leading domestic computer companies, Fujitsu, Hitachi, and NEC. There is clear evidence that "a series of IBM assaults in the form of a five-year plan is designed to sweep out Japanese opposition. The share of IBM Japan's market will probably increase by about 5 percent in the next 2-3 years." This statement (by Katashi Yamaoka chief of the Information Industry Research Association Office) reveals the fierce confrontation taking place.

As seen in this shift to the 8100 system and the system 38, this move by IBM that has in the past centered its efforts on superlarge and large machines is a new direction taken by this company to go into all out confrontation in computerization involving small machines (product diversification) that was formerly a rather lightly regarded area.

With regard to the development of new computers to counter the E series, the following statement came from Fujitsu to the effect that "this is top level strategy within the industry as a result of which there will be no comments" (vice-president Makikawa), but it seems that this company is ready at any time to make its announcement. According to the following statement "there is nothing in the 8100 series that we feel is technologically outstanding. We are in a period of transient technological development" (Takunao Yamamoto director), there seems not to be too much concern for any threat from the performance capability of the E series.

Since the actual specifications of the E machines are not yet set as a result of which no positive statements can be made, it is thought that the domestic companies can adequately compete through the installation of 64 kbit elements, new logic element development, and operational system (OS). Here again the major problem is cost performance (cost/performance ratio) and the key to this situation is how to directly confront the E series cost performance that is said to be four times that of machines of the past through an appropriate price structure.

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as far as machine capacities are concerned, the machines presently marketed by Fujitsu including M-130, 160, and 160 AD classes will be indirect competition with the E series. In addition, there will also be some effect on the higher class machines the M-180, 190, and 200. In this respect this company is planning to install a model change in its medium class M series as its first salvo in the struggle followed by improvements to its superlarge machine to counter the IBM H series machines that are expected to appear the latter part of this year.

The switchover employed in this strategy has just seen the completion of the shift from the FACOM 5 and 8 series to the M series, however, any move to a next step without first realizing adequate research and development costs for the M series as well as industrial merit will be equivalent to adding on an extra burden.

Computer development is along the two directions of superlarge computers and ultrasmall computers, and the determining factors here are semiconductors and software. The super LSI national project that is expected to be completed sometime during JFY 1979 is now at the stage that each company involved is embarking on product development to finally enable installation to computer systems. In cognizance of this situation, "the United States has elevated semiconductors to a target industry level and is throwing all its might in this direction. Our company is planning, in decisive manner, to fund facilities for producing semiconductors. (Vice-president Akazawa).

In another direction, IBM is suppressing the fraction of hardware and increasing the density of software in its systems, so Fujitsu is planning to promote still further software unbundling. In more specific manner, sales contracts involving sales engineers (SE) service, application, software, and OS (basic software) are to be promoted. It is planned to actively follow this unbundling program with the intent of doubling the better than 20 billion yen sales of last year.

In addition, the OS industry (expected to be started in April 1979) as the subject of the post super LSI policy is expected to play a leading role through incorporation of development themes such as firmware and Japanese language information system. In this manner, all efforts will be directed to the development of new superlarge machines to actively contest IBM's future system (FS) machines.

The advent of the E series will make the replacement battle within this country that much more fierce, but this company is "thinking of increasing SE manpower during the coming 3-year period and reinforcing its organization through manpower reallocations" (director Hashi), and it is said a policy of restructuring its industrial setup will be executed.

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At the same time, the combination of reinforcement of the industrial network and reorganization of the computer industry is thought to be causing a reemergence of closer ties between this company and Mitsubishi Electric.

Although both companies seem to be denying any such possibility, the increasing IBM onslaughts into the Japanese market, the cooperative setup of the OS industry, and Mitsubishi Electric's development of IBM compatible machines (research cost of 20 billion yen) are objective manifestations of the closer ties being formed between these two companies. Of particular interest is that the main banks involved in this situation, Daiichi Kingyo Bank and Mitsubishi Bank, have expressed their receptivity to this closer tie.

As far as Fujitsu is concerned, this is also the year in which its overseas strategies will be reinforced. First of all, the sales and industrial cooperative agreement concluded with the West German Siemens Company last summer seems to be ready for actual enforcement. It has been said that "the export of superlarge machines to Europe is a profitable area from the standpoint of system sales. The start looks even better than we had anticipated." There are hopes of selling 40-50 units of these superlarge machines.

Even where United States adversaries are concerned, there is a capital participation relationship with the Amdahl Company (about 30 percent capital contribution) to which export of products marketed under the trade name (OEM) exceeded 200 units as of the end of last November, and export of superlarge V-8 machines with the trademark of OEM will be initiated. The Fujitsu-Amdahl relationship is said to be an "interadult relationship," and there has already been a closed license agreement ratified between these two companies (December of last year) on the LSI elements for the 64 kbit installation on Amdahl's next generation computers. In this manner, this cooperative relationship between the two companies is continuing in the face of the framework of IBM's offensive. In addition, Fujitsu is also considering direct export of its products to the United States by initiating export of its medium M series machines through its American subsidiary corporation FACOM America.

This company, which presently is facing the IBM typhoon, is planning, first of all, to convene a Fujitsu technological show at which it plans to concentrate its technological quality for display to the world sometime in February. It is vital that this company, which is the symbol of excellence of domestic computers, take a stance that will have a major impact on the Japanese computer industry's fortunes.

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[11 Jan 79, p 15]

[Text] Hitachi, Limited

Hitachi, Limited is reputed to be the member of the top three computer companies of Japan with the strongest position as far as financial structure and overall sales performance are concerned, and it will also be faced with a make or break situation in the 80's when IBM plans its massive assault. Certainly the "simple vigor" that is this company's tradition will not see any outward display of flamboyance, and it is expected that this company will continue its line of assessing the actual situation accurately in planning its expansions.

First of all, there is the statement "this is the year for the end of the life cycle of computer parts" (Fujimoto, chief of the Electronic Equipment Industry Headquarters) that is the basic understanding by which this company is quietly developing its machines to counter the IBM E and H series computers. The "1800 Information System" that IBM announced last year is in direct competition with this company's "L series" machines. One of the measures taken by this company to counter this IBM entry was the announcement of minor change machines in the L series about the end of last year. It is said that wholesale changes in the "8100" machines are being studied this year even involving model changes.

The computers of the series with the developmental names of "Maya" and "Inca," which are the foci of maximum interest, are expected to be unveiled about the end of this month, and this company, just as the other two companies Fujitsu and NEC, is planning to up the performance of its elements and to complete its software centered operating systems (OS) in order to counter this IBM development. It seems to be withholding the announcement of the new series till sometime later. What is of concern here is the reputed four-fold betterment in cost performance (cost/performance ratio) over the past models, and how to counter this increase is a major item. This company rapidly switched over during 1973 and 1974 to own company rentals and thereby decreased the JECC (Japan Electronic Computer Co) rental density as a result of which its computer divisions gained better financial status. At the same time, the outlay for computer related research and development was increased 15 percent over the previous year (excluding outlay for facilities), and it is thought that this company is in a position to adequately cover costs of any new developments.

The nature of the struggle of the 80's is expected to change according to how far IBM intends to pursue its price policy, which is the main weapon in its strategy. According to IBM, "series of price increases will be due to mass production effects, and any new machine development takes into account the wishes of users all over the world," and this assault is expected to be continued over a considerable period if this statement is any indication.

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The E series may be thought to be the replacements for the 115, 125, and system 3 of the IBM 370 series. It is expected that the monthly rental for the 115 machine will be 2,300 dollars (current rental 3,500 dollars) per month, and the corresponding cost performance will be 4.5 times that of the past. As far as Hitachi is concerned, upping the performance of the medium type M machines is its most pressing problem, but it seems to be waiting for IBM to come out with the entire specifications for its E series before making any counter moves.

At the same time, the future computer is thought to be headed toward greater components use, and this company plans to place greater emphasis on semiconductors and IC as a countermeasure. Director Mita, who is considered the prince of this company, became the most responsible personality of this division after taking over command several years ago. He is revealing a posture of placing greatest weight on the introduction of electronics to household and heavy electric use through the greater use of LSI and super LSI.

On the other hand, the manner in which its overseas strategy "blossoms out" is also another focal point of this company. The basic policies here are 1) export of trademark items (OEM) to contest relatively well established competitors and 2) export of computer systems. These are the two major policies under consideration.

As far as 1) is concerned, OEM export to the Utel Company of the United States (M series) has become substantial while export of peripheral and terminal equipment to the BASF Company of West Germany is increasing. The relationship with the Intel Company of the United States is expected to see enhanced "intimate operations" between these two companies as a result of one of IBM's major assault targets being the plug compatible makers (PCM). It has been indicated that the difficulties associated with computer exports involve "the search for soil that can be nurtured followed by the training of personnel to be nurtured" (Fujimoto, chief of the Industry Headquarters). In this manner, there seems to be great desire for systems export that has greater appeal in business negotiations.

What is here seen as the first "step" is export to the United States. "We will decide by the end of March of this year whether we will or will not export to the United States" (Fujimoto, head of the Industry Headquarters). At the present time, market surveys and machine selections are under way. It seems that the medium type machines will be exported to the United States if the decision is to start this export. This again depends on the effect of the E series, and its schedule may also be altered.

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The target for the next overseas penetration after the United States is the Chinese market. The reestablishment of relations between the United States and China that was negotiated on 1 January and the easing of regulations by the Committee for Control of Exports to Communist Countries (COCOM) have caused anticipation of feverish exports of computers from both the United States and Japan. In this respect this company has sent one "M-170" and two "M-160 II" for meteorological observational studies, one "M-160 II" for resources prospecting use, and process computers for the Hosan Steel Plant in Shanghai.

Furthermore, it is said that "there have been a number of inquiries from China," and this company seems to be anticipating considerable business. It has been claimed that the domestic computer makers must assure themselves of at least 10 percent of the world's computer market if they are to combat IBM in the future, and there is not other way for these computer brigades but to stand on their own and to direct sales programs overseas and plan for mass production.

It is said that this company's computer sales total more than 190 billion yen. It is reliably expected that this year's sales will exceed 200 billion yen, but the computer seems headed for expansion to the foothills industries. In this manner, there are a number of problems that this company must revolve.

These problems include 1) countermeasures against IBM's computer strategy based mainly on the hard machine main body and fulfillment of software lines centered on introduction of firmware, 2) development of strategy to introduce more electronics into household electrical and automobile use, and 3) setting up a new information oriented society through the tiein between computers and communication equipment.

Among the problems associated with software, fulfillment of increases in basic software in line with new machine development and increase in the number of sales engineering personnel (SE) seem to be the subjects under principal study. A first step in this direction was the establishment of a special company for training SE personnel that was initiated in September of last year.

At the same time, efforts are being directed at introduction of more electronics into household electrical applications in addition to the developments in computerization. In addition, a "home computer" directed at household use is being produced for industry.

In another direction, this company is in a weaker position in the area of communication equipment compared to Fujitsu and NEC, and there is need for promoting research in this area to cope with the coming C and C (computer and communication era). This company follows the motto of "step by step" approach that steadfastly permeates its business

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operations, but the manner and degree to which this integrated electrical maker Hitachi with major emphasis on heavy electrical equipment will develop its computer area will greatly control the directions taken by the domestic computer industry, and it is expected that this company will put forth its greatest efforts.

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[12 Jan 79, p 14]

[Text] NEC

President Hiroji Kobayashi directed the following criticism at the reporter with regard to computers. "You feel that IBM's compatible (interchangeable) machines are superior while the noncompatibles are no good in your accounts. This is something the user has to decide. Assuming that there is complete conversion to compatibles, it would mean that the entire market will be taken over by IBM."

Fujitsu, Hitachi Limited, and even Mitsubishi Electric are hitting at IBM's compatibles. Under the emphasis that compatible machines are the only way to go, there are limits to which domestic sales can cover development costs and sales costs, and sales must reach out to overseas markets. In such a situation, the question arises whether the noncompatibles will become a bottleneck. In this respect President Kobayashi has been stressing that it is nonsensical to make that distinction between compatibles and noncompatibles. At the same time, he stated that the computer systems which are the central nervous system of the nation's economy and society as well as national defense are best served by noncompatible computers.

He also made the following analysis that the IBM assault centered on the E series is not directed mainly at "Japanese makers and American PCM (plus compatible makers)" but is the outcome of the "100 year war" between IBM and ATT. This company from the outset has not been out to topple IBM nor does it have any policy for computer specialization. It runs a balanced business consisting of the four mainstays of communications, semiconductors, computers, and household electrical goods. It plans step-by-step strategy to the very end.

Here is introduced this company's computer strategy, which can be summarized in the following manner: 1) development of noncompatible machines, 2) development of machines to counter the E series, 3) problems with NTIS that is a joint venture with Toshiba, and 4) overseas strategy centered on office computers.

Director Akira Koike, who is the actual party responsible for this company's computers, stated that 1) there are no plans to replace host computers by noncombatibles and 2) the present practice of using compatibles for peripheral and terminal equipment will be continued. This is the policy that seems to prevail. "There are merits and demerits to

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to both compatibles and noncompatibles" (director Koike) as he frankly stated his opinion. He also stated "the significance of using either type differs with the situation at hand."

If, for example, all the ACOS machines were converted to IBM compatibles, it cannot be denied that vast development cost will be necessary. There seems to be a growing consensus of this company's members that it should continue to follow the noncompatible route.

The machines to counter the E series machines are expected to be announced sometime this month, and the following clearcut strategy was outlined in the manner "we are not considering a completely new series of machines. Leveling up will be instigated centered on the competitive ACOS 500 as well as the 400, 300, and 200 machines also of the ACOS series" (director Koike).

In this sense this company has adopted a system that enables announcement of its policy with no time lag following the appearance of the E series, but the essential item here is just how much this company can make up for the alleged cost performance (cost/performance ratio) that is attributed to the E series and whether it can completely fill its software repertoire. These performances will mark the demarcation between gain and loss.

This company has announced its answer to IBM's concentrated and dispersed type computer the "8100 information system" in the form of its "N4700 system." There seems to be the situation that this company has already completed close analysis of the E series machine capabilities to come out with this announcement.

In addition, this company opened up an office automation campaign last summer featuring its Offcon and facsimiles. It is reinforcing its System 1000 model machines (three types) and its dispersed treatment systems by which it is hitting for expansions at the lowest level of use.

In another direction, with regard to future directions for computers, this company stands on the basic awareness of "following the direction of componentization." It plans to place even greater emphasis on semiconductor development to bolster the basic technology.

This company ranks third in the world in the volume of semiconductor sales following companies headed by TI (Texas Instruments), and it plans to lay the foundation for becoming No 2 during the course of this year. It has been clearly established that the 1978 sales in the area of electronic devices will break the 120 billion yen mark.

The next major problem as far as this company is concerned is how to fill out the system for NTIS that was started in April of last year. Last April about 500 of Toshiba's large type machine business people and about 50 people of NEC's staff were merged into an operation in the form



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of "two people and three feet." The anxieties over confusion in efforts and alienation of users that could have occurred at the outset were very little, and there are assurances that the targeted sales goal of 20 billion yen for JFY 1978 will be realized.

The subjects under consideration this year include the reinforcing of the business system, shift to a concentrated production system for turning out superlarge and large machines, and the unitization of the software and maintenance industries. In this manner, problems awaiting solution are piling up. Based on the judgment "the basic steps are in line" (director Koike), there is need to pursue what directions need to be followed in order to enable establishment of the degree of cooperative setup that can be built up under the development theme of the operational system (OS) that is expected to be started in April of this year and determine the manner in which the next generation system will be completed to support super LSI development. It should be noted that the footprints of NTIS will serve as a "test case" in the light of the increasing clamor for a third stage reorganization.

The major items in this company's overseas strategy are exports of Offcons to the United States and Chinese export strategy. Where Offcons are concerned, "NEC information systems" have already been built, and market surveys and the business system are being completed. The intelligence terminal printers head a list of items that have substantial export record, and it is planned to export the "system 100 Offcon this year in addition to the above. This company together with Mitsubishi Electric has been leading the field of Offcons, and it is expected that some positive results are forthcoming.

In the area of exports to China an order was received in the fall of last year for a medium type ACOS 300 from a light industry company located in Shanghai to be used to control its trade. In addition, an order for a large type computer ACOS 500 was received from the Chinese postal service and is waiting approval from the Communist Sphere Export Control Committee (COCOM). Last year this company conducted a staged exhibition of computers that was the first of its kind in China, and it is said that the reception was very favorable. The exports to China will emphasize the characteristics of noncompatible computers, and some favorable results are expected.

As far as computers are concerned, this company is directing its attention to growths in the computerization area exploiting communications technology designed in anticipation of the union of computers and communication (this company introduced this C and C concept some 15 year ago). In this sense a considerable fraction of the company's strategy is expected to be pointed in this direction, on the other hand, there seems to be some question just how much weight should be placed on development and sales in the computer area, and the time is not far off when a definite choice has to be made.

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USSR

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ORGANIZING A DATA TRANSMISSION NETWORK IN BELORUSSIA

Moscow VESTNIK SVYAZI in Russian No 12, Dec 78 pp 30-33

[Article by M. F. Prokopenko and N. Ya. Omel'chenko]

[Text] The republic-wide automated system for management of the national economy (RASU) being set up in the Belorussian SSR includes sector-wide automated management systems (OASU's) and provides the means for interaction between these systems and the republic-wide network of computing centers (RSVTs) as well as the republic-wide data transmission network (RSPD).

The republic-wide data transmission network is understood to include data transmission subscriber stations, communication channels, channel switching offices and message commutation points that handle remote exchange of information among a broad class of users (subscribers) and the computer information centers of the OASU's with output to the network of computing centers of OGAS [State-Wide Automated System of Data Collection and Processing for Accounting, Planning and Management of the National Economy].

The RSPD is being set up as a collective-user system for meeting the needs of all ministries and agencies for remote data processing in the computing center network. As a consequence of the lag in the pace of development of communication facilities behind the rates of development of computer hardware, this equipment is not being used to its fullest extent.

Up until 1970 the only actually existing facility for data transmission was the AT-50 teleprinter, which does not meet modern requirements either for transmission speed or for fidelity, which is less than 10^3 for symbols.

In addition to developing a teleprinter network, steps have been taken in the republic to organize the transmission of information at higher speeds over multiplexed local and long-distance general-purpose telephone networks. Data transmission terminal units (DTTU's) have been invented, registered and used in transmitting information without the knowledge of the Ministry of Communications. Agreements have been made with subscribers having Akkord-1200, DFYe-550 and TA-600 DTTU's for using the general-purpose telephone

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network to transmit information at a speed of 600-1200 bauds. This equipment permits transmission of 128 symbols and is provided with an error-correcting device that guarantees reliability of at least 10^5 - 10^6 for symbols. The representatives of communication enterprises periodically check the power at the output of the DTTU's, which should be such that the signal level at the input of the closest transmission system does not exceed -13 dB (50 μ W) at a point with zero relative level.

In addition, work is being done in the republic on developing and registering the Shtrikh facsimile equipment. The proprietors of this equipment are now using it or are planning to use it for information transmission over the multiplexed general-purpose telephone network. Agreements have been made with their [sic] proprietors, and payment has been collected.

Thus before organization of a separate network for data transmission in the republic, use is also being made of the multiplexed telephone network.

A plan has been worked out for development of communications in the BSSR for the first phase of data transmission in coordination with the State-Wide Data Transmission Network for 1976-1990 with separation of the years 1976-1980. Development of the first phase of the data transmission network for the RASU of the BSSR is based on calculations of information flows done by the Belorussian Affiliate of the All-Union Scientific Research Institute of Problems in Management Organization. The planning organization determined the capacities and types of stations for commutation of channels and inclusion of data transmission subscribers for each regional and territorial center, the required number of primary channels in each direction, and also the number of secondary multiplexing channels for the data transmission network.

In addition to the necessity for further development of the AT-50 network for data transmission, the plan reflects development of a PD-200 network with provisions for including about 4000 subscribers. The main purpose of this network on the first phase is to meet the requirements of the rapidly developing automated management systems of the republic for slow-speed data transmission. In addition, the plan gives a list of station equipment, primary and secondary multiplexing channel-forming facilities and cable connections necessary for organizing a data transmission network. The production space that is required in communication centers to accommodate the equipment of the data transmission network is defined.

Consideration is taken of the development of communication facilities for organizing exchange of information between republic, regional and territorial centers of the BSSR.

The sum of capital investments necessary for setting up the first phase of the data transmission network is distributed through the ministries and agencies (shareholders) depending on the planned number of subscribers and the volumes of data to be transmitted.

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The plan that has been worked out does not cover problems of development of communication facilities for organizing the data transmission network from subscriber enterprises to territorial communication centers or the expenditures for equipment in local shops, including the acquisition of transmitting equipment installed for subscribers.

Plans are being worked out for setting up data transmission networks between computing centers and subscribers of Minsk and regional centers of Belorussia. The Ministry of Communications of the BSSR has been commissioned to plan, build and utilize outside line structures, station and channel-forming equipment, and also to handle technical management of network development.

We are faced with the problem of providing for the possibility of data transmission over communication channels between Minsk and the regional and territorial centers of the republic during the Tenth Five-Year Plan. For each PTUS [expansion not known] provisions are made for specific appropriation of capital investments to pay for telegraph equipment, and specifics are given on installing switchboard and channel-forming equipment in cities.

The base for setting up the data transmission network in the BSSR was already being prepared in the eighth and ninth five-year plans. Work was being done on constructing intercity cable communication lines that enable organization of considerable trunk groups of telephone and telegraph channels, including for data transmission.

The PD-200 network in the BSSR is being set up by:

-- construction of AT-PS-PD or Nikola Tesla crossbar telegraph systems for channel commutation in the next few years in the regional centers and large cities of the republic;

-- installation of PTS-K and ATK-PD automatic substations in territorial centers;

-- organization of 200-baud channels on main lines and within oblasts, using TT-48 and TT-12 series-produced equipment;

-- setting up 200-baud telegraph channels between automatic stations or substations installed on telegraphs and subscribers by using type TVU-12M, URAL and DATA multiplexing equipment for municipal telephone lines;

-- using the local shops that are components of the YeS Ryad computer system as the terminal devices that must be acquired by the subscribers.

To train managerial and engineering-technical personnel for setting up the data transmission network in the republic, lectures on the fundamentals of organizing a data transmission network have been distributed to all PUTS and communication enterprises by the division of intercity telephone-telegraph communications of the Ministry of Communications of the BSSR. This lecture gives the brief characteristics of the AT-50 network and describes the ways

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that the PD-200 network is being set up, the technical specifications of new channel-forming and commutation equipment, the layout of the terminals of the Ryad computer system.

In the offing for the tenth and eleventh five-year plans is construction of automatic telegraph stations for channel switching in AT, PD and PS networks in all regional centers, and channel commutation substations in all territorial centers of Belorussia. The years 1976-1977 saw the introduction of a PS-PD station in Mogilev, an AT-PS-PD station in Bobruysk, and a Nikola Tesla-D station in Minsk. This year (1978) AT-PS-PD stations have been installed in Gomel, Novopolotsk and Baranovich, and an AT-PD station has been introduced in Grodno.

Before the Nikola Tesla station was put into operation in Minsk, the commutation of 200-baud channels between Minsk and regional centers was handled by a combined method:

-- manually at the Minsk telegraph, by using a special correspondence commutator (KOK, Fig. 1) modified for this purpose. Fig. 1 shows a diagram of a universal subscriber set for the PD-200 network designed around the ARK-TT-20 equipment; Fig. 2 gives a diagram of the trunk set of the worksite of the KOK-M commutator modified for the PD-200 network;

-- automatically at the telegraphs of the regional centers by means of type PTS-K and ATK-PD substations. Experimental operation of the PD-200 network was begun in March 1977 in accordance with the method of channel commutation between Minsk and the regional centers. To do this, TT-48 equipment was used in the necessary directions to organize two or more 200-baud mainline channels each. Such communication channels have also been organized to a number of territorial centers by installing TT-12 equipment.

Between telegraphs and subscriber proprietors of terminal facilities for data transmission, 200-baud channels are set up by using TVU-12M and DATA channel-forming equipment. Practice has shown that TVU-12 equipment is the most suitable for organizing combined 50-baud and 200-baud channels. This equipment has shown stable operation with high reliability and does not require large labor inputs for hardware servicing. In the case of a small number of PD-200 subscribers located in direct proximity to one another, 200-baud channels are set up with DATA-6 equipment, or as a last resort -- DATA-3.

Of all the DTTU's for the YeS Ryad computer system developed in Hungary, Bulgaria and East Germany, the TAP-2 apparatus is most suitable for work on the PD-200 network. The republic received its first consignment of TAP-2 equipment (YeS-8502 produced in Hungary) in 1976. The equipment was distributed to ministries and agencies that were most prepared to utilize it in their own automated control systems.

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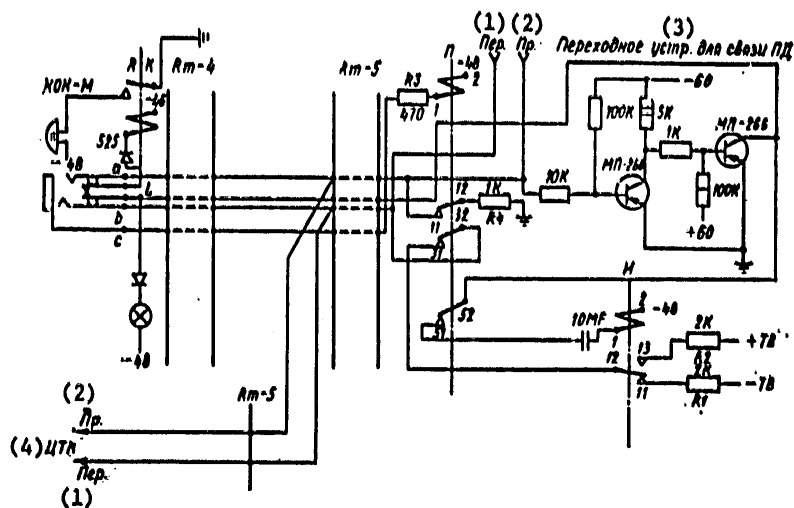


Fig. 1.

- KEY: 1--Transmitting
- 2--Receiving
- 3--Terminal set for data transmission communications
- 4--Central Telegraph Office

As of late 1978, the PD-200 network included 75 subscribers. Besides, at the Minsk and regional telegraph offices of the republic PKP-PD collective-user data transmission points had been set up.

To train technical personnel for servicing the TAP-2 terminal facilities, the Ministry of Communications of the BSSR has conducted classes of instruction on the equipment. A number of republic ministries and agencies that are setting up sector-wide automated management systems have also held classes with wide attendance of their own engineering-technical personnel to study the TAP-2 equipment.

The Ministry of Communications of the BSSR has worked out an agreement for use of the PD-200 multiplexed telegraph network according to which the subscriber is obligated not only for timely payment for services rendered, but also for technical servicing of the TAP-2 facilities. Instructions on operational servicing of subscribers of the PD-200 network are extremely necessary.

It should be noted that the TAP-2 has a number of deficiencies that must be eliminated. A weak point is the pushbuttons on the front control panel that operate on the basis of the Hall effect. The drive belts and the chad

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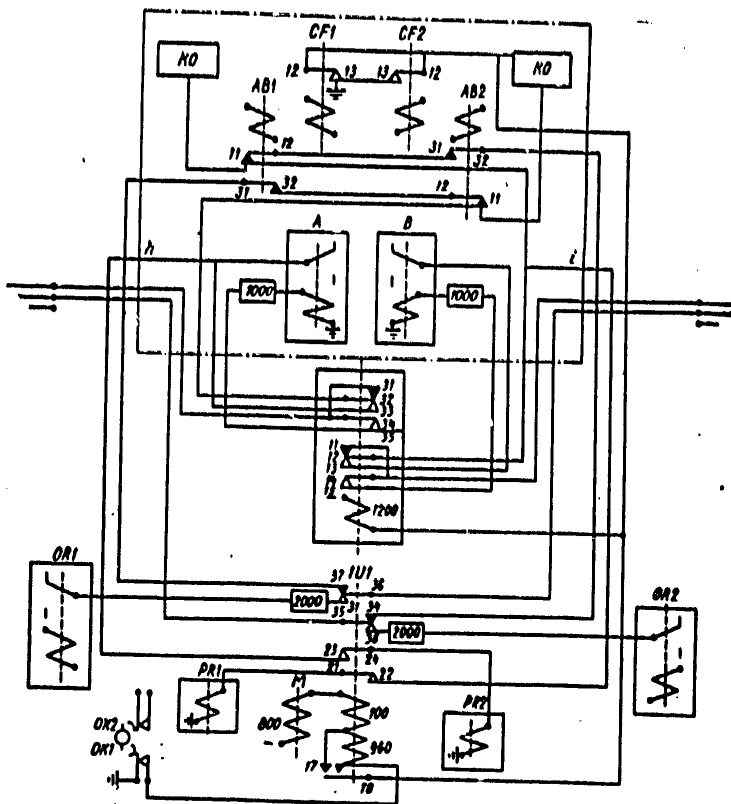


Fig. 2

cleaning cover on the YeR-35 reperforator are subject to failure. The Konsul-260 electric printer needs frequent adjustment.

A number of difficulties have been encountered in the process of carrying out work on setting up the PD-200 network and operating it in our republic. For instance after putting the Nikola Tesla station into operation and connecting the ATK-PD substations to it, it was found that there is no possibility for connecting the subscribers included in these substations to those included in the Nikola Tesla base station because the TAP-2 equipment has no provisions for the process of receiving and indexing an "invitation to preset" signal, i. e. the second response of the station. Engineering-technical workers of the centers of communications of the republic have suggested a correction for the circuit of the ATK-PD substation summarized in the Table, which eliminates this "incompatibility."

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TABLE

Working mode	Equipment designation	Pins between which jumpers are installed
Reception of two "station response" signals without transmission of a network category index	VKS-1	$A_5-B_5, E_3-B_4,$
	VKS-2	$B_2-\Gamma_1,$ $E_5-\mathcal{K}_5, \mathcal{K}_3-\mathcal{K}_4,$ $\mathcal{H}_2-\Gamma_5$
Transmission of two "station response" signals without reception of a network category index	Register	$\Pi_1 (\Gamma_6-B_6)$ $\Pi_1 (\mathcal{K}_9-\mathcal{K}_{10})$ $\Pi_1 (\mathcal{K}_6-\mathcal{K}_7)$

From the Table it can be seen that in the case of an outgoing connection for reception of two "station response" interaction signals without transmission of a network category index, jumpers are installed across the pins of the network category index transmission set (VKS-1, VKS-2), while in the case of an incoming connection for transmission of two "station response" interaction signals without reception of a network category index, jumpers are placed across the pins of terminal block Π_1 of the register P . The problem of warranty and post-warranty maintenance of the TAP-2 equipment must be resolved. In our opinion these functions should be carried out by specialized enterprises equipped with spare parts and having skilled specialists. A re-examination should be made of the makeup of the individual set of spare parts for the TAP-2 data transmission terminal unit since the delivered set contains only TE3 plates.

There are still no confirmed normatives for the expenditure of type TSV station cable for installation of AT-PS-PD stations calculated per number of installed capacity because the planning agencies do not take consideration of the cable requirements when calculating the funds to be allocated for the planned year. For lack of TSV cable alone, the AT-PS-PD stations in the installation stage in Gomel and Grodno in 1977 were not put into operation, and construction was carried over to 1978.

Finally, some consideration should be given to firming up the rates to be charged for use of the PD-200 network.

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FRANCE

MINISTERS' COUNCIL MEETS ON SPACE TELECOMMUNICATIONS

Paris AIR & COSMOS in French 17 Feb 79 p 43

[Article by Pierre Langereux: "Council of Ministers on Space Telecommunications"]

[Text] A meeting of the Council of Ministers on space is scheduled for 28 February at the Elysee to address the basic guidelines of French space policy, on a national level and on cooperative levels--bilateral (particularly with Germany) and multilateral (with the ESA [European Space Agency]). This meeting should confirm previous guidelines already laid down by the Council of Ministers and put into effect by the minister of Industry, as regards reforming the CNES [National Center for Space Studies] tutelary and administrative structures and subsidizing industrial and commercial space activities, especially for export--this concerns especially the space telecommunications systems consultant activities which are the responsibility of the SateI-Conseil group--but also as regards creating a new structure for the production, marketing and promotion of the European "ARIANE" rocket: the Transpace company project that France must shortly present to its European partners.

'TELECOM 1' and Direct TV

But the principal topic of the meeting will certainly be the report prepared by Mr Cannac at the request of the president of the republic in regard to the development of teleprocessing, and especially space telecommunications.

It will deal mainly with the two new French projects: that of "TELECOM 1," the national satellite for telecommunications and data transmission, prepared by the CNES and the DGT [General Directorate of Telecommunications]; and those of direct TV transmission satellites developed from CNES and TDF [French Television Broadcast Network] studies on "TDF 1," a national satellite for direct TV, and from studies on "H-SAT," a European project, carried out jointly by AEROSPATIALE [National Industrial Aerospace Company] and MBB [Messerschmitt-Boelkow-Blohm] in a French-German cooperative effort, together with ETCA [expansion unknown] (Belgium), within the Eurosatellite company framework.

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The "H-SAT" project is actually at a standstill after Germany's and France's refusals to fund it (see AIR & COSMOS No 751), Bonn having undertaken the study of a competing project, "TV-SAT," in the hope of gaining the lead over France in the market for television broadcast satellites which looks very promising in view of the interest being exhibited in Europe (France, Germany, the Scandinavian countries, Luxembourg, Belgium, Italy, Yugoslavia, etc.).

It is difficult to foresee whether a satisfactory compromise can be found to reconcile German demands and French interests.

In the absence of a reasonable consensus, France might well have to develop its own television broadcast satellite, not so much to satisfy a domestic need as to enable French industry--especially AEROSPATIALE and Thomson-CSF--to enter foreign markets in the face of their American--and German--competitors.

It will also be a matter of determining whether France has the necessary financial means to support two new national projects ("TELECOM 1" and "TDF 1") simultaneously in addition to existing priority national projects such as the CNES "SPOT" observation satellite, and perhaps also its military derivative, the "SAMRO" reconnaissance satellite.

The direct TV satellite, however, is certain to be viewed as a new priority for various reasons. To begin with, market for satellite television broadcasting is still untapped while that of classic telecommunications is largely dominated by the USA. And, according to the industrialists, the direct TV satellite market could take off like an avalanche as soon as one country places such a propaganda instrument in service and its transmissions inevitably begin to spill over into bordering countries: The latter will have no other recourse but to similarly equip themselves to offset the influence of their neighbors.

A Heavy Launching Platform for 'ARIANE'

But the development of a television broadcast satellite, which will necessarily be a "heavy" (1 ton) satellite, is also a priority operation since it will provide the opportunity for building a satellite (omnibus) platform especially suited to the launching conditions and performance of the "ARIANE" rocket. It appears, in fact, that a European capability to offer its clients a "global contract" which associates furnishing of the launcher with the building of a "made to order" satellite would favor the market for the European launcher.

The heavy platform is thus the last indispensable link in the panoply of launching facilities in which Europe has just invested so heavily. It would be absurd to have invested 4.5 billion francs in the development of the rocket and 1.5 billion francs in its proving ground 3 [as printed] and to not be able to also build the satellites which this rocket can put into orbit. This is the last step to be undertaken and perhaps the most profitable.

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