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12 April 1982

Worldwide Report

TELECOMMUNICATIONS POLICY, RESEARCH AND DEVELOPMENT

(FOUO 8/82)

FBIS FOREIGN BROADCAST INFORMATION SERVICE

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SATELLITE BROADCASTING PROJECTED IN 1990

OW221305 Tokyo ASAHI EVENING NEWS in English 22 Mar 82 p 3

[Text] In the report the Study and Research Council on the Diversification of Broadcasting submitted on Friday to Posts and Telecommunications Minister Noboru Minowa, it says that people will be able to enjoy television broadcasts using broadcasting satellites in the 1990's. Broadcasting satellites will make it possible for people to enjoy TV programs that are as clear as movies, the high-fidelity reproduction of music, and to receive, by means of a facsimile machine, hundreds of thousands of pages in just 30 seconds, as well as still images with sound.

The report called for studies on technical developments, the establishment of technical standards, the benefits to listeners and the economic feasibility of such broadcasts.

The council was established within the Posts and Telecommunications Ministry in July 1980 and consists of 15 professors, journalists, researchers and critics. They studied demand trends, technical developments and problems connected with future broadcasting policy.

The report submitted Friday to Minowa consisted of three parts: (1) Trends toward diversification in the broadcasting field; (2) outlook for and problems of broadcasting policy; and (3) proposals.

Symbolic of the whole is satellite broadcasting, which will begin with the practical broadcasting satellite (BS-2) to be launched in March 1984. There will be color broadcasts on two channels; both channels will be used for NHK broadcasts to remote islands and mountainous areas, where the reception of ordinary broadcasts is poor, and during disasters.

Later two satellites, BS-3 and BS-4, will be launched to make available eight channels under an international agreement. Users can receive broadcasts anywhere in Japan if they turn a bowl antenna one meter in diameter toward the point where longitude 110 degrees east crosses the equator.

The problem is economic feasibility. If the advertising charge system is adopted, the NHK channels will compete with commercial broadcasting stations. The report proposes that the broadcasting waves be encoded and that listeners buy magnetic cards each month to insert into decoders. The proposal is, in effect, for pay television. The report says that such broadcasts will be economically feasible if 10 million people buy the pay TV receiving cards.

CSO: 5500/2167

BRIEFS

NEW METEOROLOGICAL SATELLITE LAUNCHED--Tokyo, 17 Mar (JIJI PRESS)--Japan will launch a new geostationary meteorological satellite, called GMS-3, by N-II rocket in fiscal 1984 to replace the present "Himawari (Sunflower) II," the Space Development Council decided Wednesday. The council also decided that Japanese space engineers will start in fiscal 1983 preliminary designing of the nation's third telecommunications satellite, dubbed CS-3, to be lofted by the next-generation large rocket H-I. The council, chaired by Director-General Ichiro Nakagawa of the Science and Technology Agency, works out Japan's space development program every year, taking into account the domestic and international situation. [Text] [OW171445 Tokyo JIJI in English 1433 GMT 17 Mar 82]

CSO: 5500/2167

FRANCE TO PARTICIPATE IN DEVELOPMENT OF SWEDEN'S TELE-X

Paris AIR ET COSMOS in French 6 Mar 82 pp 43, 48

[Article by P.L.: "Important French Participation in the Swedish 'TELE-X' Satellite"]

[Text] French industry is being called on to play a very considerable part in the building of the Swedish TELE-X experimental telecommunications satellite. The CNES [National Center for Space Studies], which has participated in the preliminary project studies since 1980, is taking on the role of consultant to the Swedish Space Corporation during the definition phase presently in progress. Furthermore, the Swedish company SAAB [Swedish Aircraft Corporation]-Scania, responsible for the design and construction of the satellite, is getting support from the Franco-FRG Eurosatellite group, which will furnish the platform for the TELE-X satellite, and from the French company Aerospatiale for project definition and management. In addition, the Swedish firm LM Ericsson, responsible for TELE-X's payload, is getting important technical support from the French company Thomson-CSF [General Radio Company], notably for definition of the repeaters, which will make maximum use of the equipment developed for the French direct-TV satellite TDF 1 and the Telecom 1 telecommunications satellite.

Within the framework of the contract made with the CNES at the end of 1981, the Toulouse space center has formed a special support team for the TELE-X project; in liaison with the personnel responsible for the French direct-TV satellite TDF 1, it is assisting the Swedish team with the technical monitoring of the industrial contracts in progress and preparation of the contract for construction and launching of TELE-X. Furthermore, an agreement to reserve a European launcher was signed by the Swedish Space Corporation with Arianespace on 11 February 1982. It provides for the launching of TELE-X in June 1986 with an Ariane 2 rocket.

Furthermore, the TELE-X project has been considerably revised from the initial proposal. In particular, the Swedish Space Corporation has eliminated the Trucksat payload, intended to provide for communications with trucks in West Europe.

The three other missions of the TELE-X satellite, using two repeaters for direct TV and two others for transmission of data and video images, are retained, though. They involve preoperational missions for:

--transmission of digital data: a two-channel repeater, operating in the 14-14.25 GHz frequency band (for upward connections) and the 12.5-12.75 GHz band (for downward connections), provides for transmissions among a large number of earth stations located on the territory of the Scandinavian countries. The choice of a high radiated power for the satellite (100 W per channel) is related to the objective of use of earth stations that are as simple as possible;

--transmission of video signals, using, on a time-share basis, the same equipment on board the satellite as for the preceding mission. These video-signal transmission cover both visual- and sound-broadcasting transfer connections and teleconference, tele-education and teledistribution connections;

--broadcasting via satellite, through the intermediary of a two-channel repeater operating in the 17.3-18.1 GHz (upward connections) and 11.7-12.5 GHz (downward connections) frequency bands. This is a broadcasting (direct-TV) mission in which the choice of high radiated power on the satellite (230 W per channel) permits individual reception with the aid of a small-diameter (60 to 90 cm) antenna at any point in the territory of the Scandinavian countries (same coverage as for the preceding two missions).

We note that TELE-X will be used not only by Seden but also by Norway, Finland and Denmark. It effectively prefigures the future Nordcom operational telecommunications satellites of the Scandinavian countries.

11267
CSO: 5500/2155

NAVY REVEALS DETAILS OF MILITARY SATELLITE, FUTURE OPTIONS

Paris AIR ET COSMOS in French 31 Oct 81 p 43

[Article by Pierre Langereux:"The Syracuse Network Will Be Operational in January 1984"; for related article see JPRS 79740, 24 Dec 81, #194 of this series, pp 35-36]

[Text] By 1 January 1984, the French Army and especially the French Navy will have available to them an operational SYRACUSE [Satellite Radio Communication System] network for military and government telecommunications via satellite. This was revealed by the French magazine ARMEES D'AUJOURD'HUI in an article by Navy Capt Christian Ract-Madoux, a distinguished officer of the SYRACUSE program in the Operations Division of the Navy Staff.

This SYRACUSE program, the existence of which we revealed several months ago (see AIR ET COSMOS No 866), will use the first two national civil telecommunications satellites--Telecom 1's--that will be launched in July and October 1983 respectively by European Ariane 3 rockets and placed in geostationary orbit at 7 and 10 degrees West to cover Europe, Africa, the Middle East, the Mediterranean and Atlantic Ocean, and part of the Indian Ocean. These satellites are built by MATRA [Mechanics, Aviation and Traction Company] with the participation of numerous French firms, including Thomson-CSF for the telecommunications payload involving the two 7.25-8.40 Hz military transponders, the TOP [progressive wave tube] amplifiers of which will be furnished by the American firm Ford Aerospace.

The SYRACUSE network will provide the Armed Forces with telephone and telegraph circuits that are reliable, secure and protected against jamming. This space telecommunications system will be "supplementary" to the military HF network and "justifies the effort being made by the Navy to improve the reliability, security and resistance to jamming of its HF circuits," Captain Ract-Madoux explains.

According to this high-ranking officer of the SYRACUSE program, the ground segment, developed under the aegis of the DGA [General Delegation for Weaponry], the General Staff of the Army and that of the Navy, will include:

--Three earth stations situated near Brest, near Paris and Southern France. Two of these three stations will be on Navy bases and will be manned by Navy personnel; the third will be on a Ground Forces base;

--Some 10 mobile stations designed especially for use by the Navy for foreign actions and to strengthen the OMIT [Military Interforces Communications Organization];

--Some 10 naval stations which, taking into account their cost and to optimize their use, will be transportable from one ship to another; some 15 large ships will be equipped to accommodate these stations.

By way of one of the two Telecom 1 military transponders, the ships will be able to establish up to three simultaneous links with the metropolitan earth stations. These links, which will be encrypted and protected against jamming, will be operated mainly as slow- and high-speed telegraph circuits and CHS [high-grade-encryption] telephone circuits.

SYRACUSE will be the first military telecommunications satellite facility to become operational in France.

Succe:sor to SYRACUSE

Considering the limited service life (7 years) of Telecom 1 satellites, the Armed Forces have already begun thinking about the space system that is to succeed these satellites come 1990. According to Captain Rack-Madoux, this could be:

--Either a mixed civil and military satellite--a solution that, attractive though it is from the cost standpoint, poses two major problems: A limited and very likely insufficient capacity if the network is to be opened to other users; and a spot on the orbit that will be very difficult to provide, since the more different frequency bands a satellite covers, the more complex its positioning becomes. It must in effect be distanced at the same time from other military as well as other commercial satellites. This problem, already a difficult one for Telecom 1, is likely to be an impossible one in 1990 considering the large number of satellites that will be launched between now and then.

--Or a satellite exclusively for governmental and military use, which would make it possible to extend the network to many users and, by the use of other frequency bands, to resolve the problems of station congestion and hence to consider aircraft and submarine links.

But--the author concludes--while this solution is attractive, the question is: Will the Armed Forces be capable of undertaking such a space program while continuing their effort to improve telecommunications links that use conventional frequency bands?

9238
CSO: 5500/2111

ARIANE ELICITS COLOMBIAN INTEREST, COMPETES WITH NASA

Paris VALEURS ACTUELLES in French 28 Dec 81-3 Jun 82 pp 28-29

[Article by Francois Lebrette: "The Clients of Ariane"]

[Excerpts] Space is smaller than it would seem to be. It offers only 90 spots to geostationary satellites--those links that more and more will be replacing earth-based cables for telecommunications--although present plans call for the launching of over 200 of them during the next 10 years.

"Basically," says Mr Klaus Iferland, assistant director of the Arianespace company, "all that is necessary is to increase the frequencies used in order to obtain a severalfold increase in the number of usable channels."

This German engineer, who 10 years ago worked on the Europa rocket, now works on the technical aspects and the marketing of the Ariane launcher. In a French barely marked by a slight accent, he explained to me:

"Actually, the problem will not be really acute except where direct television satellites are concerned. Each country is going to want to brim over into the other countries so as to increase its audience. And it is not yet certain that the receiving antennas will be sufficiently selective.

The issue has been brought now to the fore and in an unexpected way, by a country one would not have expected to do so: Colombia. Straddling the equator as it does, this country has decided to "nationalize" the space region directly over it. The United States, the first to use the American zone of the equatorial orbit, has obviously refused to agree to this intent on the part of Bogota. And with arguments that are not without substantial weight.

To begin with, says the United States, there is a difference between outer space and adjacent space. Furthermore, it is unacceptable that the geostationary orbit be confiscated by the only countries situated on the equator, thus constituting a kind of orbit OPEC consisting of Zaire, the Maldives, Indonesia and Gabon.

Above all, the Colombian claim is inconsistent from a technical standpoint. Once or twice a month, a satellite is subjected to an eclipse: The sun no longer feeds its photoelectric panels. Since it would be too costly to carry heavy batteries

aboard the satellite, the spacecraft is shifted, in these cases, a few degrees westward of the receiving country, to reduce these "outages" to just a few hours during the night. In other words, if Colombia wanted to put up satellites, it would have to "shift" them over above its neighbor: Ecuador!

The concern of the third-world countries, however, is understandable. They too will be needing satellites, and even more so than the industrialized countries. Thus, Indonesia has ordered from the United States its own geostationary satellite, which since last spring has been providing telephone communications among the largest of the country's 4,000 islands. To interconnect them by means of conventional cable facilities would have been very much more expensive.

In countries lacking basic infrastructures, the most viable solution is the satellite. Provided there is room on the equatorial orbit. In this context, those able to launch satellites can dictate the law. But they can be counted on the fingers of one hand.

Japan, with its small "N" rocket can place 250 kg in geostationary orbit. But it is still in the testing stage, and tests so far have not been conclusive. It appears that China is doing double quick time as regards the launching of its "Long March" rocket, but the launching is not expected to take place for at least another year.

Ariane launched the first satellite dedicated to maritime links--Marecs 1--on 20 December. And it is still Ariane that will place Marecs 2 in orbit in April. But for the first time, the Soviets have offered to launch a foreign satellite: The international organization Inmarsat's satellite scheduled to be orbited in 1983 or 1984.

Apart from this exception, competition in the international satellite-launching market is reduced to two rivals: Europe with its Ariane, and the United States. The term "competition" is actually not very exact: With only two in the market, they cannot keep up with the world demand. Mr Iferland explains:

"NASA cannot fill all requests, because of constraints with regard to launching dates, which must often be very exact. Ariane derives the benefit from this situation.

Nevertheless, the Americans are not welcoming with enthusiasm the arrival of the Europeans in a market that has been their monopoly since the launching of Early Bird (weighing scarcely 40 kg) in 1965. The fact that Ariane is competing with NASA for its own domestic clientele does not make them any happier.

The Arianespace company and the ESA [European Space Agency] have in hand 22 firm orders for launchings, including particularly those of five American satellites: one for Western Union, two for the GTE Corporation, two for Southern Pacific Communications. Moreover, the Europeans have gained the Arabic clientele. The 14th Ariane rocket will carry up the first Arabsat in February 1984. In sum, the international organizations, long dominated by the Americans, are beginning to deal with the European organization: This is already the case with the Marecs launchings and will also be the case with Intelsat.

Arianespace also has bookings on 16 reservations, each one covered by a paid-in binder of $100,000. Among its potential clients are: Brazil, Australia, again Arabsat, and Colombia for two Satcol's.

"The controversy between Washington and Bogota on the ownership of space has been beneficial to us," says Mr Iferland laughingly.

Each launching represents 1 milliom hours of work for the firm that is chosen. Five contracts a year guarantee close to 4,000 jobs: The economic interest is obvious. This explains the decision by the Europeans to build, at Kourou, a second launching platform for Ariane. It will cost 600 million francs and will be ready by the end of 1984. By that year, Kourou 1 will have reached saturation with six launchings (versus three planned for 1982).

The Americans are reacting by preparing a second launching platform for their Thor-Delta rockets; this installation could become operational next year. The delays experienced by the Shuttle had already led NASA to resume building its Thor and Atlas-Centaur rockets, on which it had been marking time.

Even the coming into being of the Shuttle does not worry the Europeans. Today, a launching by Ariane costs 20 percent less than with a Thor-Delta. But the price of a launching by the Shuttle will be half that by the European rocket.

"Actually," Mr Jferland thinks he is correct in saying, "for the Americans this represents a price to which they are bound owing to a serious underestimation of the cost of the Shuttle, and which will be valid only until September 1985."

Beyond that guaranteed period, NASA will therefore have to revise its price. Will it then be cheaper than Ariane? Designed to return to earth, the Shuttle cannot go too far out into space; it cannot attain the height of the transfer orbit from which a satellite reaches its final orbit under its own power. To orbit geo-stationary satellites, the Shuttle must therefore carry as a supplement the equivalent of the third stage of the Ariane rocket. This presents a very complex and costly problem.

In any case, the Americans, over the next 10 years, will have only four shuttles. By 1985, the Europeans will be able to put into orbit weights of 4 tons with Ariane 4 (versus less than 2 tons with today's Ariane). The choice between the two vehicles will undoubtedly depend upon price, but also upon diplomatic considerations. And it is still not certain that these two launchers will then be enough to satisfy the demand.

9399
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FRANCE

MATRA TO BUILD NEW FACILITIES, ENTER DBS MARKET

Paris AIR ET COSMOS in French 6 Mar 82 pp 39-41

[Article by Pierre Langereux: "MATRA (Mechanics, Aviation and Traction Co] Is Taking On the Direct-TV-Satellites Market"]

[Text] As 1982, marking the 20th anniversary of MATRA's entry into space, begins, Noel Mignot, director of the company's space sector, has reason.

The turnover of MATRA-Space has doubled in 1 year, from Fr 382 million in 1980 to Fr 702 million in 1981, while its personnel grew from 645 to 854 persons, with an average age of 32, the lowest in the company.

Furthermore, the staff will soon reach 950 employees (51 percent of them engineers and cadres), and they will number more than 1,000 next year--half at Velizy, near Paris, and half at Toulouse, where MATRA has just placed in service its new Palays space center, which represents an investment of Fr 190 million. MATRA thus has Europe's biggest space center for construction and integration of satellites. With its 25,000 m^2 of covered surface area, including 2,200 m^2 in clean rooms, it will make it possible to integrate 5 satellites simultaneously and will be able to accomodate the biggest satellites of the 1990's--both those of the Shuttle kind and the future European Ariane 5 rocket.

Outlook for Evolution of MATRA-Space's Turnover by Sector from 1981 to 1986

	1981		1986		
Turnover	Millions of francs	%	Millions of francs	%	Growth %
Telecommunications	244	34.7	350	18.4	43
Observation of Earth	215	30.6	820	42.2	281
Science	40	5.7	300	15.7	650
Launching facilities	152	21.7	290	15.3	90
Miscellaneous	51	7.3	140	7.4	174
	702	100.0	1,900	100.0	170

NOTE--The relative decrease (not in absolute value) of the telecommunications sector derives from the fact that MATRA has not identified successors to the ECS, MARECS and TELECOM 1 satellites before 1986.

MATRA-Space's order book presently stands at Fr 1.2 billion, or a little more than 2 years of activity, and it should reach Fr 1.5 billion in 1984.

MATRA-Space's forecasts are to realize a turnover of Fr 900 million in 1982 and Fr 1.3 billion in 1983, and subsequently maintain steady growth to reach Fr 2 billion in 1986.

Evolution of MATRA-Space Personnel Strength and Turnover

Years	Personnel	Turnover (millions of francs)
1973	196	117
1974	234	145
1975	286	198
1976	392	262
1977	393	281
1978	427	290
1979	476	305
1980	645	382
1981	854	702
1982	(955)	(900)
1983	(1,026)	(1,300)
1984	(1,043)	(1,500)
1985	(1,044)	(1,700)
1986	--	(1,900)

Editor's Note: The figures in parentheses are forecasts.

Note: To take the general services and internal subcontracting into account, the number of personnel has to be multiplied by 1.6 to give the actual number of MATRA personnel working in space.

For that time, Noel Mignot foresees a levelling-off in the volume of MATRA's space activities (in terms of turnover). The distribution of these activities should then be as follows: observation of earth, 42 percent; telecommunications, 18 percent; scientific programs, 16 percent; launching facilities, 15 percent; several other activities, 7 percent. MATRA has especially aimed at getting firmly established in the sectors of data-processing and space robotics, in which it wants to become one of the principal French firms, notably with a view to the future automatic-orbital-station (Solaris) and relay-satellite (Star) space programs, French or European.

Opportunities Missed

Everything would therefore be going for the best if it were not for the cumulative effect of four missed opportunities last year, which have somewhat damped the natural optimism of MATRA's "space people."

MATRA lost the contracts for the Arab Arabsat telecommunications satellites (won by Aerospatiale-Ford Aerospace) and for the Australian AUSSAT telecommunications satellites (won by Hughes Aircraft). Next, it was beat out--by deci-

sion of the public authorities-- for the Brazilian Brasilsat telecommunications-satellite contract (awarded to Aerospatiale). Finally, it was not able to reach an agreement with the American builder Hughes Aircraft for participation in construction of the Intelsat 6 telecommunications satellites.

This obviously comes to quite a bit, and one understands that MATRA is uneasy about the future--all the more so in that the new export competition in the telecommunications-satellite sector (Mexico, Colombia, etc) is far from being won by the European builders--principally the French builders--against the two big American competitors, Ford Aerospace and especially Hughes Aircraft, whose position as world leader is strengthened after its recent successes.

Nonetheless, MATRA is responding to Mexico's call for bids for its domestic-telecommunications satellites.

MATRA-Space has therefore had to change its strategy somewhat in order to counterattack on two fronts--i.e., on the telecommunications front, with a new and improved platform, and also on the direct-TV front--a market heretofore "reserved" to Aerospatiale by a sort of consensus (approved by the public authorities) from which MATRA now considers itself liberated after the "Brazil affair."

However, MATRA does not want to wage a pointless competition with Aerospatiale. "The most absurd thing," declared Noel Mignot, "would be to end up in a Franco-French competition"; rather, "it is necessary first of all to conquer the European internal market."

Fourteen Satellites

MATRA is playing a major part in the construction of 14 satellites: French (Telecom 1); British (Skynet 4); and European (OTS, ECS, MARECS)--these latter having been built within the framework of the European MESH [MATRA-Erno-Siddeley-Hawker] consortium.*

Two OTS satellites have been launched, the second successfully, in May 1978. This OTS-2 has already been functioning for almost 4 years.

Two MARECS satellites have been built. The first, MARECS 1, successfully placed in orbit on 19 December 1981, went into service on 27 February. The second satellite, MARECS 2, will be delivered on 8 March 1982 and will be launched from Kourou on 22 or 23 April. A third flying model will exist, in the form of unassembled parts, but it is not planned to launch it.

Five ECS satellites are under construction. The first, ECS 1, will be delivered on 19 May 1982 and launched by Ariane on 9 July. The following three satellites, ECS 2, 3 and 4, are to be launched on 23 April 1983 and January and October 1984, respectively. The fifth satellite will remain in reserve on the ground.

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* MESH: MATRA (France), Erno (FRG), British Aerospace (Great Britain), SAAB (Swedish Aircraft Co) (Sweden), Aeritalia (Italy), INTA (National Institute for Aerospace Research) (Spain) and Fokker (The Netherlands).

Three Telecom 1 satellites are also under construction, at Toulouse. Final integration of the first satellite should begin in September. There is a chance that the launchings of the first two satellites, Telecom 1A and 1B, officially planned for July and October 1983 by the CNES [National Center for Space Studies] and the DGT [expansion unknown], may be delayed by several months, until September and December 1983, according to MATRA, because of delays in delivery of equipment (X-band power source) by the American firm Ford Aerospace, for the satellites' military payload. But MATRA has provided for a third integration team in an attempt to make up for this delay. In principle, the placing in service of the Telecom 1 satellites, planned for March 1984 by the French PT [Posts and Telegraph] administration, should not be jeopardized.

In addition, MATRA has recently obtained a participation (attitude control) in the two new British Skynet 4 military telecommunications satellites, for which British Aerospace has adopted the Telecom 1 platform. These Skynet 4 satellites will be launched at the end of 1985, by the Shuttle or Ariane.

MATRA is also participating (attitude power plant) in construction of the European L-SAT telecommunications satellite under the prime contractorship of British Aerospace, and of the FRG's direct-TV satellite TV-SAT, built by MBB [Messerchmitt-Bolkow-Blohm].

It also hopes to participate on the future Italian Italsat telecommunications satellite, in exchange for the Italian industry's participation in fabrication of the structure of the Telecom 1 satellites.

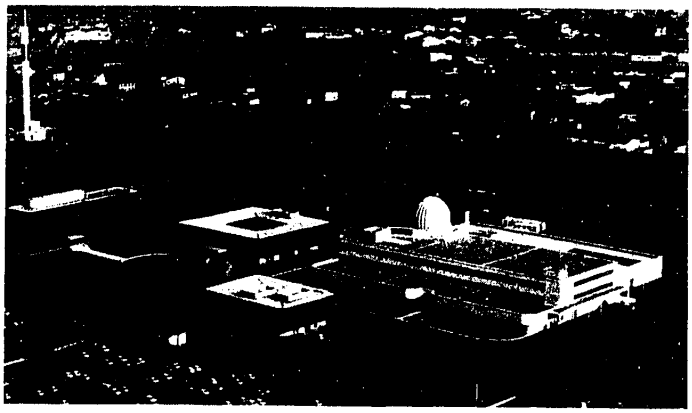
Improved Platform

These 14 satellites all use the ECS/Telecom 1 type of platform, which actually derives directly from the OTS platform, the technology of which is also being reused.

MATRA now recognizes that this ECS/Telecom 1 platform is no longer suited to certain new high-performance missions (Australia, etc), especially in the face of the American competition (RCA, Hughes Aircraft).

MATRA and British Aerospace have therefore decided to improve the ECS/Telecom 1 platform, in two phases.

In the first phase, a second-generation Telecom 1 platform will be developed and tested, with a deadline of September 1983. Two principal improvements of the existing platform will be made: nickel-hydrogen batteries (SAFT [expansion unknown]) instead of Ni-Cd batteries, and a liquid-bipropellant propulsion system (MBB) instead of hydrazine propulsion. This will make it possible to increase the platform-position payload capacity by 40 kg (30 percent more than for Telecom 1). The new platform will then be at the level of the recent American products (RCA's Advanced Satcom). However, it is not certain that it will be used for the Skynet 4 satellites; but it will be proposed by MATRA for the future Telecom 2 (successor to Telecom 1) and Star satellites, as well as for an eventual French military telecommunications satellite (successor to Syracuse).



General view of MATRA's new Palays space center. The big technical building contains the integration rooms and an antenna-testing base (radome on roof).

In the second phase, further improvements will be added, so as to have in 1986 a platform suited to the level of the European Ariane 4 launcher. The platform will therefore have the following additional features: a carbon-fiber structure rather than a metal one; LSI [expansion unknown] components instead of discrete components; and in particular, microprocessor-based programmable digital electronics. This new conception--modeled on the one adopted by RCA and Hughes--will in effect make it possible to associate the platform more closely with the ground control segment and to simplify the latter, providing increased flexibility and economy.

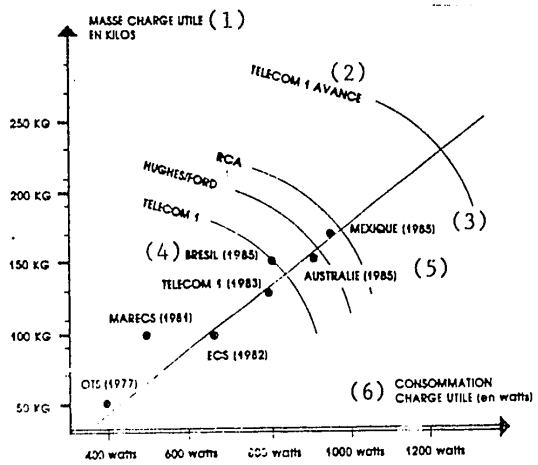
MATRA and British Aerospace, which since April 1981 have been joined in the Satcom International group, thus hope to regain the advantage over their competitors, by having both an improved platform, better-adapted to the market, and operational references ncecessary for convincing the potential customers (OTS is an experimental satellite).

As of the end of this year, MESH and Satcom International will thus be able to show three operational telecommunications satellites (MARECS 1 and 2, ECS 1), and at the end of 1983, there should be seven telecommunications satellites in service in Europe.

This will therefore definitely establish MATRA's credibility--and especially that of British Aerospace. For the 14 satellites mentioned above have all been

built under the prime contractorship of British Aerospace, except for the French Telecom 1 satellites. British Aerospace is therefore really the No 1 European builder of telecommunications satellites, contrary to a recent assertion by the president of MATRA.

Adaptation of the ECS/Telecom 1 Family to the Market



Key:

1. Payload mass in kilos
2. Advanced Telecom 1
3. Mexico
4. Brazil
5. Australia
6. Payload consumption (in watts)

Evolution of the ECS/Telecom 1 platform to increase its launching capacity--first to the capacity level of the American platforms (RCA and Hughes), and then beyond that level. MATRA document.

MATRA also has a kind of "prime-contractorship" complex in this area vis-a-vis its British partner and its French competitor. This explains its ambitions.

MATRA thus hopes to obtain, between now and 1990, the prime contractorship for 5 to 6, even 5 to 7, programs for telecommunications satellites for export--i.e., 15 to 20 satellites. This represents 20 to 30 percent of the world market outside the United States (25 programs). MATRA is counting especially on 1 to 2 European programs (out of 8), 2 to 3 "sovereignty" programs (out of 7), and 2 to 3 programs (out of 10) outside Europe and the United States, at the prime-contractorship and integration levels, with also the possibility of participation (remote measurement, telecommand, attitude control, data-processing) in 8 to 11 programs, including half of the European programs.

On the national level, MATRA is aiming notably at the prime contractorship for the Telecom 2, Star and Syracuse-successor satellites. At the European level, it is counting on the successors to the ECS's and MARECS's, and on the international level, participation in the coming Inmarsat satellites and prime contractorship for a future "hybrid Intelsat."

In order to make its export breakthrough, MATRA is therefore counting a great deal on its imminent credibility and on its new, improved Telecom 1 platform. This "one-third Ariane 4"-class platform will in effect make it possible to launch into geostationary orbit satellites of 1,350 kg, including 250 kg of payload (1,200 W), for telecommunications and direct-TV missions (3 channels, ellipse of 1-1.5°).

Thus, MATRA is prospecting for applications in telecommunications in Italy for the Italsat program and in the FRG for the proposed Postsat national satellite, as well as in direct TV in the European "small countries" (Switzerland, Luxembourg, Spain, etc), for launchings around the end of 1986.

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