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West Europe Report

(FOUO 21/82)

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POLITICAL NETHERLANDS

VAN TRAA ON LABOR PARTY'S INTERNATIONAL RELATIONS

Amsterdam VRIJ NEDERLAND in Dutch 20 Feb 82 p 13

[Interview with Maarten van Traa, international secretary of PvdA (Labor Party), by Jan Stoof: "Yes, Eh, No: 'In My Campaign I Said Demagogically I Would Go by Train with a Sleeping Bag, but that isn't Right.'"; date and place of interview not given.]

[Text] Of all the Dutch political parties there is one which can boast an international secretary with a full-time job: the PvdA. Moreover, this functionary elected by the party congress is also included in the executive committee of the party. As such he also has to concern himself with the general duties of that executive committee.

The international aspect predominates, however. The diplomatic attaché case of the current man, Maarten van Traa, is provided with a durable nametag supplied by a large travel agency. Bonn, Paris, Helsinki, Tel Aviv, Latin America; that attaché case has been almost everywhere.

Much of the work of PvdA's international secretary is concerned with maintaining contacts with sister parties, members of the Socialist International. The international labor movement for a long time past has looked beyond national borders; the yoke of capitalism was always pushing everywhere. The concept of the world-wide importance of initiating the 8-hour workday, just to mention a 19th century controversy, led to the establishment of the First International in 1864. Karl Marx attended it. This organization existed for 8 years.

In 1889 the Second International was founded in Paris, an organization of the various national socialist groups. Periods of great prosperity and sharp decline alternated. In 1951 it even had to be refounded in Frankfurt Amongst others, the PvdA was represented there.

International secretaries of the PvdA were, consecutively: Alfred Mozer and Max van der Stoel (who were not part of the

executive committee), Piet Dankert, Relus ter Beek, Harry van den Bergh, Wim Bogaard, Relus ter Beek again, and since 1979, Maarten van Traa.

The international secretary of the PvdA does more than just maintain contacts with the other members of the International. Sometimes he prepares standpoints of the party on matters such as NATO membership, the desirability of placing cruise missiles in the Netherlands, the attitude of the Israeli government toward the Palestinians, and the oppression in Argentina, just to mention a few topics. Further he maintains contacts between the party executive and the commission for foreign affairs of the parliamentary group of the Second Chamber, speaks at demonstrations and demonstration days and writes angry letters to evil dictators who keep kindred spirits locked up. It's a dog's life, but never uninteresting.

The discussion on the socioeconomic policy of the second Van Agt cabinet seems to have pushed to the background somewhat the discussion which was raging, especially within the PvdA, on NATO and nuclear arms and on various foreign countries in general. Sometimes a matter comes into the limelight again, such as the oil boycott of South Africa only last week, and shortly, the Dutch troops in the Sinai. And then Maarten van Traa will be speaking again, in private, at party council meetings, in the media, and with activist groups.

Harry van den Bergh said to me "When Maarten came, there was absolutely no foreign land for the PvdA."

Maarten van Traa, the foreign secretary of the PvdA, lights his pipe for the umpteenth time. He gives me an inquisitive look: "Did Harry say that? And (distrustful) does he think it is there now?"

[Question] He told me: "Maarten is doing rather nicely."

Van Traa smiles weakly: "When I came, no; there were primarily a few dossiers on the back burner which had to be sorted out. I spoke for an afternoon with my predecessor, Relus ter Beek, and then I got started. Oh, yes, that afternoon Relus ter Beek called the eternal colleague of the SPD, Hans Eberhard Dingels, in order to introduce me to him. Two weeks later I went to Spain, and there I introduced myself to the ladies and gentlemen of the Spanish socialist party. Well, that was that."

Relus ter Beek, foreign specialist for the PvdA in the Second Chamber, became interim foreign secretary after Wim Bogaard had given up. Van Traa: "Relus had kept things rolling, had kept them better rolling than his predecessor who, well, eh, who didn't really know how to do it. Let me put it this way: he had both underestimated the job and, moreover, he had another half-week job. Thus I found something without direction, and little by little I gave it direction in my own way."

[Question] Weren't you surprised (I asked as PvdA dues-payer) that the foreign secretariat was so easily put on a back burner?

[Van Traa] "Yes, a little, indeed a little. I had wondered on occasion what exactly was going on there, but of course there is always a sort of secrecy involved You think a lot has to be done, and the documentation has to exist. I was somewhat surprised about it, yes. Relus had the general outlines in his head, but they were not worked out on paper. There were some letters, some dating back 2 years, those kinds of things. But everything now has been pulled together."

[Question] When you took office you said that the international secretariat must again become a center where ideas come together which stimulate discussion on the long term. That did not turn out as well as expected.

[Van Traa] "At that moment we had an entirely different pattern of expectation with respect to the power of the party. Officially we were still involved in the Forward program at that time, which in practice had been abandoned by members. In that program, foreign policy more or less was composed of phrases such as "take care of . . . comma," and "or in such an event to advocate . . ." etc. Therefore the debate had become somewhat unclear, especially within the party. Of course there was the debate on NATO and, more than now, on North-South relations. But not on the Soviet Union, the problems of human rights, and relations with the United States. At that time we lived with an election platform which read that NATO was actually a threat to world peace. That had been included by mistake, or perhaps by amendment, but no one found it very important; it was more in the sphere of: you have to include twice the volume, so that half of it will get done. I never found that a good approach, although sometimes it is easy to understand that it was resorted to -- out of integrating considerations, to put it fashionably."

[Question] Do you mean: to keep the party together?

[Van Traa] "Yes."

[Question] Since 1979 the discussion on peace and security and on NATO has become considerably less abstract; the decisions which were asked for were rather concrete. Moreover, Den Uyl's threat in 1979 to give up his candidacy if the party were to insist on the rejection of all nuclear tasks put the party on the ground with both feet.

[Van Traa] "Stemerdink, and Klaas de Vries and Relus in the parliamentary group, brought the discussion to a practical level with respect to the consequences of that American modernization decision. There was an enormous acceleration at that time which led to practice and the party getting closer together. And although Den Uyl still had a difficult time when he had to speak at the manifestation against the modernization in Utrecht in November 1979, it did bring credit to the party; it was a successful operation, for due to that, the fact that we do not want to place them was in any event accepted in wider circles. I'm still thinking: if we had not done that at that time, we would not be in the cabinet now -- and ultimately that is the objective."

[Question] It seems the discussion on nuclear arms will never stop . . . .

[Van Traa] "No, and I think that's good . . ."

[Question] and shortly the nuclearization of the F-16 and, woops, there the party goes again, on its hind legs . . .

[Van Traa] "Yes, but we'll have to avoid that. I think a plan should come about. We must not distance ourselves from the minister; there is little sense in that if one doesn't make good on it; I have also learned that meanwhile."

[Question] What plan?

[Van Traa] "A: which nuclear tasks you reject -- the F-16 has to be included in that, and B. why you do it. Recently I discussed this problem with a few high officials of Defense, and there is really no one who can indicate why those things have to be kept around exactly. There are general political reasons, but you should have a foreign policy with it, and that still doesn't exist. Thus, for example, at one point we will have to explain what kind of link exists between the United States and Europe, for that has sometimes been a mistake of the PvdA; it always acted as if the United States did not exist in relation to Europe."

[Question] Isn't the party driven to some extent by the desire to resist the United States, cost what cost?

[Van Traa] "Look, a lot has been said about the position of the PvdA in the Netherlands, at least the position we thought we had: if the socialists are the biggest party in the Netherlands, then we should be able to do what we want to do. In itself that still is the correct attitude, only one is confronted with the data that outside of the Netherlands power politics play just as much a role and that therefore one is forced to make all sorts of compromises, first as a party and then as government."

[Question] Helding, in the NRC [Nieuwe Rotterdamse Courant-Handelsblad] recently accused you of not being clear on that . . .

[Van Traa] "Because of my daily political work, it has unfortunately not been possible to write a thorough article in Heldring's magazine, the respectable "International Spectator." But Heldring does give somewhat the impression of: how can a decent guy not agree with my standpoint?"

Alternatives

"His position is essentially: we are in NATO, the United States are the most powerful in that, and that puts limits on what is possible and what isn't; any alternatives that could be developed in Europe come to nothing anyway. That's why I believe he wrote after the Polish coup that we should give Jaruzelski the benefit of the doubt. In other words: that we should not have the illusion in the Netherlands that we can change even an iota in foreign policy. I disagree with that.Socialists also must find room and strength for a different view of society where they are the strongest. That is within Europe."

[Question] Haven't you had a difficult time with the Soviet Union in the last 3 years?

[Van Traa] "Yes. First Afghanistan, then Poland, and in between the SS-20. I don't think we're out of our difficulties yet. I think that in the Netherlands we are going through a process which also took place in France -- to a more violent degree. We are wondering exactly what the sociological development of that state is. Officially, that was already covered in our declaration of policy, for that states that democratic socialism differs in principle from state socialism, but that simply means the Soviet model as compared to the American, the capitalist model.

We have of course been a little too long under the influence of well-meaning clergymen who, without any dialectical knowledge, adopted the attitude of 'it can't be all that bad' in NCSV [Dutch Christian Students' Union] camps, and who were of course very much influenced by the pressure to eliminate anti-communism."

Teach-in

"Look, if you are from a party which in 1952 let Koos Vorrink go to the SPD to persuade the comrades in Bonn to agree to German re-armament with the Atlantic Alliance and whatever else, and through Dr De Jong at that, then a prominent PvdA member whom I can still see defend the position -- at a teach-in together with Hiltermann -- that the regime of Mr Diem offered the best guarantees for a democratic development in South Vietnam, and through Mr C.L. Patijn who saw the regions of Pomerania and East Prussia as natural German territory in the debate on the DDR, then you really have to swallow a lot. And then it is not so strange, in an historical respect, that as a party you needed time to digest the Gulag -- the 10 or 15 million dead of Stalin.

"But we have indeed made mistakes in the analysis, and I have indeed changed in that respect. But what I am always being accused of with respect to Poland is that I did not do anything worthwile, and that is not right. Solidarity did not want direct contact; we tried it but they did not want contact with any socialist party in the West because they clearly understood they should not do that. Now they want it, and now it's too late."

[Question] Harry van den Bergh, at the time his re-election came up, was reproached for spending too much time in airplanes and too little in the party branches. Wim Bogaard promised congress the opposite manner of working and he was elected. Van Traa also has the international air traffic schedule at his fingertips.

[Van Traa] "I also use airplanes. In my campaign I said demagogically that I would travel by train, with a sleeping bag, but that is not the case."

[Question] The international home port for the international secretary of a socialist party is the Socialist International. The members of that International are parties from such diverging countries as the Netherlands, Finland, the FRG and Senegal. How does that work?

[Van Traa] "Sometimes it works smoothly, but sometimes not so smoothly. Brandt was very irritated about the course of events with respect to Poland. I can easily understand that from his point of view; he is the architect of the Ostpolitik. Sometimes things don't go too smoothly. I know that Brandt said to Mitterand -- but that was not in an S.] [Socialist Youth] meeting--: 'Do you know we have many more missiles stationed in the FRG than there are in your republic, and do you also know that you will use the weapons you have first in Germany and not in France, and that we do not have the same power of decision on that as you do?' Mitterand answered to that: 'Well, yes, that is one of the nasty consequences of World War II; I can't help that either.' Well, that doesn't promote communication.

"Often things go much better in smaller groups than in large meetings which sometimes threaten to become a type of small United Nations."

[Question] Who are the greatest contributors?

[Van Traa] "Kreisky, Palme, Jospin, Joop den Uyl also when he feels like it, Karel van Miert, Michael Harrington because he always has a very fine and good analysis of what is happening in the United States, and Brandt himself, although he does not participate too much in the debate, but he does all sorts of things in connection with it. The Italians; not many people listen to them except to Craxi when he comes himself, but he usually doesn't come. Felipe Gonzales, Soares to a lesser degree; that is somewhat of a past glory, but Gonzales is one of our few younger forces who have a very great tactical capability. He has a very good analytical capacity. And he is also a nice, ordinary man. Some of those people no longer act like mortal men. That is part of the difficulty."

[Question] Who?

[Van Traa] "Mitterand, very much so. I spoke with him 5 times in my life, but only once, after a dinner in Santo Domingo, was I able to simply talk with him for an hour. Not that he will remember, but I find something like hat important, because I still have the normal Dutch notion that you have to know the person you're dealing with."

[Question] Eternal feuds?

[Van Traa] "Yes, the Israelis and Kreisky, of course, but that is known. But in general things are done diplomatically, and it should be that way in order to get down to business in such a large group."

Direct Power

[Question] In that International you are concerned with real international giants, such as the West Germans, people who have cabinet responsibility such as the French, and people who are truly in the midst of the struggle, such as the Israelis. What exactly is the weight of the PvdA in such a group?

[Van Traa] "Of course it is not a matter of power as such, but more of the dynamics of such a Socialist International -- the image they have of it in

Latin America and in the United States -- rather than of the precise content of our discussions. But sometimes you have direct power, as I did during the 1980 congress when I was chairman of the resolutions commission; then, of course, you have influence on such a declaration. It is also a matter of just being everywhere, of presence. And via the secretariat of the Socialist International, you can organize something, such as last year when I wanted to go to Argentina. I phoned and said: "Can't we make a mission of it?" And I went there, and walked on the square with those women. We were there also in connection with the situation around the Argentine socialist party, which had discredited the Socialist International by cooperating too much with the junta. Now, after our report on that trip, they are being suspended."

[Question] Thus you get to see rulers who are not always kindly disposed towards you. Have you ever been thrown out?

[Van Traa] "No, but sometimes something like: 'That's enough, sir.' I always try to act properly and start with a long introduction. Sometimes it is difficult when people really want to start a discussion with you. The classical counter question is: 'You had the Moluccans, didn't you? You took steps against them, didn't you? There were casualties, weren't there?'

"In Argentina we wanted to discuss the missing persons. We asked if we could submit a list with 6000 missing persons. We were told: 'No, we don't want that, that matter has been closed.' 'But,' we resumed, 'aren't there special cases of people who either completed their punishment or who were never convicted and who have permission to enter four or five countries?' 'Well, which people do you mean, exactly?' Do you understand: first it is the general principle, and afterwards a choice. And then you still don't know if it will work.

"But thrown out, no, not that. There were some tricks, however. Last year we were in Uruguay, three of us -- the Spanish party, the French one and we. I was chairman. And the minister of foreign affairs wanted to talk only to the French because he had studied in France and had such good memories of that. Actually, he did that of course because Mitterand had just been elected "

[Question] Have you ever had the feeling that you're being driven up a wall? Kurds, Nicaraguans, Afghans, Turks, South Africans, they all knock on your door, and then the nuclear arms and milk prices in the Common Market?

[Van Traa] "Yes, eh no, that is the advantage when you have been a journalist, so that you have an idea of everything you have to do with so many duties. And as to all those people, I think you have to give them time if they are at least somewhat bona fide. The only thing I hesitate about sometimes is solidarity by signature -- sending another telegram. Then you sometimes think: you're getting off too easily."

[Question] The IKV [Interchurch Peace Council] determined the atmosphere at a few congresses. The whole discussion almost cost the party its primary candidate, and now it has gone so far that the IKV is invited to weekend retreats of the party leaders.

[Van Traa] "Recently we talked at length with Ben ter Veer again. That was in the framework of the discussion with the IKV and I indeed saw somewhat of a shift in the direction of more attainable standpoints. Look, the frustration evoked by the cry /The Netherlands Free of Nuclear Arms/ is that the IKV used that slogan to make us reflect on a different security policy in general. A lot of people thought, however, that it was not a means, but precisely the goal. Well, we did not agree with that goal, and then they started to call us 'Joop [Den Uyl] Atom and his pals.' Therefore we asked Mient Jan Faber [IKV secretary] just how important making the Netherlands free of nuclear arms is to him in the framework of the European approach of the peace movement. Then he said: 'In itself that is not so important.' Look, sometimes we act as if such an activist group wronged us, but we also call ourselves a party of action, and we should not show an attitude of rejection toward a group such as the IKV. For that matter, we put ourselves behind the IKV slogan in 1979."

[Question] Doesn't it surprise you that after 21 November a party such as the PSP [Pacifist Socialist Party] isn't making greater gains than it is?

[Van Traa] "No, we have already seen that people are running off to the right, primarily because of the socioeconomic problems. They think that the left won't succeed ultimately, but in the end they will find out that it does make a difference to the armament policy that we are here. They will notice that when the government comes to a decision, that it will be opposed, or that there will be a cabinet crisis."

[Question] Will there be one, then?

[Van Traa] "Yes, that will happen. You won't believe it, but it will happen."

[Question] Do you find that, as foreign secretary, you are helping to govern the party as a whole?

[Van Traa] "I find less and less that I am responsible only for foreign matters; I also like to participate in Dutch politics; look, otherwise you become a type of technocrat who says: 'I have nothing to do with that health insurance act.' I don't want it that way. The first thing I do in the morning is look to see how many lay-offs there are. You have to fight daily against the image that the PvdA is making a mess of things. Thus, raging inwardly, I can easily phone Ferdinandusse about a headline in VRIJ NEDERLAND such as 'The Healthy National Perception of Minister Van der Louw,' without an s. As though unconsciously we have to be associated with national-socialism. Then, use a term such as the silent majority or something similar. What nonsense."

[Question] From our discussion it is continually obvious that the nuclear arms discussion is a theme that dominates almost everything. It keeps you busy almost daily; it has brought Den Uyl to the edge of the party; the parliamentary group is continually queried on that matter. Is all that not too much for a party with a broad interest?

[Van Traa] "It's not that bad, really. I am involved in it, it does determine a great deal of my work and perhaps that of one or two members of the parliamentary group, but not of others. And look, if the government is able to: a. give an idea of how it intends to reject nuclear tasks and in what framework, and b. ultimately still is able to make a decision on those missiles, we'll have made great progress.

"If it does not happen, yes, then it will indeed come back. For then the term 'pushing back of nuclear arms' can be relegated to the rummage attic of false claims. If we are not able to show that something is happening, I do not see much hope for the party."

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GENERAL FRANCE

ARIANESPACE PLANS LAUNCHES, RECEIVES ORDERS, IMPROVES ROCKETS

Orders, Launch Calendar, Military Use

Paris AIR ET COSMOS in French 2 Jan 82 pp 22-26

[Articles by Pierre Langereux: "Firm Plans for 27 Ariane Launches Through 1985"]

[Text] The ESA [European Space Agency] and Arianespace now have firm orders for the launching of 25 (soon to be 27) satellites, from Europe and abroad. These are made up of the 12 satellites for which the ESA took responsibility--3 satellites during the flight tests in the APEX free-launching program and 9 in the promotional series--as well as the 15 satellites next assigned to Arianespace for operational launchings to take place from the middle of 1983. These 27 satellites will be placed into orbit for 13 customers, including 7 from Europe (15 satellites) and 6 from abroad (12 satellites), among whom are 3 large U.S. companies--GTE Satellite Corp., Southern Pacific Communications Corp., and Western Union--and the international organization Intelsat. Five Intelsat 5 satellites are now assigned to Ariane. The Board of Governors of Intelsat, meeting in Washington on 11 December 1981, in fact decided to order two more Ariane launches to place its last Intelsat 5 satellites (F14 and F15) into orbit in March and June 1985. This new contract with Arianespace, totaling about $93 million for the two launches, should be signed in January 1982. We should remember that the first three Intelsat 5 satellite launchings (F6 to F8) have been ordered from the ESA at prices (indexed) of from $27.5 million to $28.2 million each. These are, in fact, launches planned to take place between October 1982 and July 1983 and benefit from the ESA "promotional" rates.

Operational launches ordered from the ESA and Arianespace extend from the beginning of 1982 practically to the end of 1985. (See the table.) Some scheduling conflicts between Arianespace and a number of customers whose launch orders are firm are not yet resolved.

Thus, Arianespace has scheduled the launchings of the French Telecom 1A and 1B telecommunications satellites for September and December 1983 respectively, whereas a recent official communique jointly released by the CNES [National Center for Space Studies] and the DGT [General Directorate for Telecommunications] pointed out that the customers had planned the launchings for July and

Table 1. Arianespace Customers (as of 31 December 1981)

Firm Orders

1	APPLE	India
1	METEOSAT 2	ESA
2	MARECS A and B	ESA for INMARSAT
1	SIRIO 2	ESA
2	ECS 1 and 2	ESA for EUTELSAT
1	EXOSAT	ESA
1	GIOTTO	ESA
1	AMSAT/OSCAR	Radio Amateurs (Germany)
3	INTELSAT 5 (F6 to F8)	INTELSAT
2	INTELSAT 5 (F14 and F15)	INTELSAT
2	TELECOM 1A and 1B	DGT (France)
1	SPOT 1	CNES (France)
1	VIKING	SSC (Sweden)
1	TV-SAT	BmFT (Germany)
1	TDF 1	TDF France
1	ARABSAT 1	ASCO (Arab League)
1	WESTAR 6	Western Union (U.S.)
2	SPACENET 1 and 2	Southern Pacific (U.S.)
2	GSTAR 1 and 2	GTE Satellite (U.S.)
27	Launchings	13 customers

Options

2	ECS 3 and 4	ESA for EUTELSAT
1	L-SAT	ESA
1	SPOT 2	CNES (France)
1	TELEX	SSC (Sweden)
2	SATCOL 1 and 2	PTT (Colombia)
2	SBTS 1 and 2	PTT (Brazil)
2	AUSSAT 1 and 2	PTT (Australia)
1	CLT 1	CLT (Luxembourg)
1	SPACENET 3	Southern Pacific (U.S.)
1	GSTAR 3	GTE Satellite (U.S.)
1	STC 1	Satellite TV (U.S.)
1	ARABSAT 3	ASCO (Arab League)
1	MARECS C	BADG
	TELSAT 1	BADG for TELSAT (Switzerland)
17	options	12 customers

Under Negotiation

6	INTELSAT 6 (F1-F6)	INTELSAT
2	ERS 1 and 2	ESA
1	Hipparcos	ESA
1	CBS 1	CBS (U.S.)
1	DBS 1	Direct Broadcasting (U.S.)

[continued]

[Table 1 continued]

1+	RCA	RCA (U.S.)
1+	ANIK	TELESAT (Canada)
3-4	OPMET	EUMETSAT
2	SKYNET 3	Ministry of Defense (Great Britain)
1	NATO 4	NATO
1+	SAMRO	Ministry of Defense (France)
20+	Under negotiation	10 customers

October 1983 respectively. But the launch window of July 1983 is at present reserved by the ESA for its ECS 2 satellite or an INTELSAT 5 (F8).

On the other hand, the launch windows between the end of 1984 and the beginning of 1985 which, up to now, had been firm are now free because of the delay (about 6 months) of the direct television satellites, the German TV SAT and the French TDF 1. Their deliveries, in fact, are now planned for 15 February 1985 and 15 May 1985 respectively, which defers the launching of the TV SAT until May 1985 and of the TDF 1 until September 1985. Telediffusion de France [French Television Network] reportedly wished to launch its satellite in July 1985 but that window is reserved for the ESA comet probe, Giotto, which must necessarily be launched on 10 July 1985!

Seventeen Options

Some 12 customers, of whom 5 are from Europe (7 satellites) and 7 from overseas (10 satellites), now have options from Arianespace for 17 satellite launchings between 1984 and 1986 with the new Ariane 2, 3, and 4 rockets.

These include an option for the ESA's ECS 3 telecommunications satellite in April 1984 and no fewer than 13 options for 1985. Among the latter one notes the ESA's ECS 4 telecommunications satellite, SATCOL 1 and 2 for Colombia, SBTS 1 and 2 for Brazil, AUSSAT 1 and 2 for Australia, CLT 1 for Luxembourg, and ARABSAT 3 for the Arab League, as well as SPACENET 3 of the Southern Pacific Communications Corp and GSTAR 3 of GTE Satellite Corp., already Arianespace customers. The British firm, British Aerospace Dynamics Group (BADG) has also taken an option for launching either the MARECS-C satellite or the TELSAT 1 which it hopes to build for the Telsat firm (Switzerland).

Three additional options for 1986 involve the CNES earth observation satellite, SPOT 2, the television broadcasting satellite TELEX of the Swedish Space Corp. (Sweden), and the European experimental direct TV satellite, LSAT, whose placement into orbit has been deferred from 1985 to 1986. Besides, Arianespace has potential orders which are practically certain but for which contracts have not yet been signed. Then there are the ECS 3 and 4 satellites whose placement into orbit by the Ariane is planned on dates which remain to be specified.

Table 2. Schedule of Firm Launchings With the Ariane Between Now and 1986

Flight No	Date	Payload	Rocket	
Test Flights				
L 01	24 December 1979	None	Ariane 1	CNES
L 02	23 May 1980	FIREWHEEL + OSCAR 9*	Ariane 1	
L 03	19 June 1981	METEOSAT 2 + APPLE	Ariane 1	
L 04	19 December 1981	MARECS A	Ariane 1	
Operational Flights				
L 5	April 1982	MARECS B + SIRIO 2	Ariane 1	ESA Promotional Series
L 6	July	ECS 4 + AMSAT/OSCAR	Ariane 1	
L 7	October	EXOSAT or INTELSAT 5 (F6)	Ariane 1	
L 8	December	EXOSAT or INTELSAT 5 (F6)	Ariane 1	
L 9	February 1983	INTELSAT 5 (F7)	Ariane 1	
L 10	May	ECS 2 or INTELSAT 5 (F8)	Ariane 1	
L 11	July	ECS 2 or INTELSAT 5 (F8)	Ariane 1	
Entry into Service of the New Ariane 2 and Ariane 3 Versions (mid 1983)				
L 12	September	TELECOM 1A + ?	Ariane 2	Arianespace
L 13	December	TELECOM 1B + Westar 6	Ariane 3	
L 14	February 1984	SPACENET 1 + ARABSAT 1	Ariane 3	
L 15	April	GSTAR 1 + (ECS 3)**	Ariane 3	
L 16	June	SPOT 1 + Viking	Ariane 2	
L 17	August	GSTAR 2 + SPACENET 2	Ariane 3	
L 18	October	Open	Ariane 2/3	
L 19	December	Open	Ariane 2/3	
L 20	February 1985	(SBTS-1 + SATCOL 1)**	Ariane 2/3	
Entry into Service of the "ELA 2" Second Launch Pad (March 1985)				
L 21	March	INTELSAT 5 (F14)	Ariane 2/3	Arianespace
L 22	May	TV-SAT	Ariane 2/3	
L 23	June	INTELSAT 5 (F15)	Ariane 2/3	
L 24	July	GIOTTO + (STC 1)**	Ariane 2/3	
L 25	September	TDF 1	Ariane 2/3	
L 26	October	First firing, Ariane 4 + ?	Ariane 4	
L 27	December	Open	--	

Entry into Service of the Ariane 4 Rocket (March 1986)

* Failure: launcher exploded in flight and satellites were lost
**Option to be confirmed

Twenty Launchings Being Negotiated

Negotiations in progress with Arianespace involve 20 launches with the Ariane for 10 customers.

Thus, Arianespace notes negotiations with Intelsat for the new Intelsat 6 (F1 to F6) telecommunications satellites whose compatability with the new Ariane 4 rocket is planned in the specifications. Contracts are being drawn up with the Canadian Telsat firm for launching the ANIK telecommunications satellites as well as with several American companies for telecommunications and direct television satellites, among them the CBS Network (one satellite), the Direct Broadcasting Satellite Corp. (one satellite) and RCA (several satellites after RCA H). For its part, Grumman Aerospace also believes that other potential customers, such as SBS, AT&T, American Satellite, and so forth, may also be interested. Europe also contemplates launching three or four OPMET operational meteorological satellites as successors to the METEOSAT satellites now in orbit; but that program is linked to an agreement among the member countries to establish EUMETSAT, a new European organization responsible for exploitation of operational meteorological satellites.

On the other hand, even though options have not yet been taken, the launching, in 1986, of the European scientific satellite, Hipparcos, and the first teledetection satellite, ERS 1, of the ESA--which also plans an ERS 2 a little later--can be considered certain.

This adds up, therefore, to at least 35 certain launches for the Ariane between now and the middle of the decade, of which 27 are firm, plus 5 launches under option, and 3 more in negotiation, to count only the satellites whose construction is certain and whose launchings are necessarily planned with the Ariane.

Military Satellites

For the first time, Arianespace is also counting upon negotiations with defense organizations for launching of military satellites between now and the end of the decade. The launching of such "nonaggressive" satellites (telecommunications, observation, navigation, and so forth) is actually compatible with the objectives of Arianespace, which is committed to "peaceful" launchings.

Thus negotiations are underway with the British Ministry of Defense for launching two SKYNET 3 military telecommunications satellites. These launchings are being negotiated by Arianespace in competition with the Space Shuttle at "military" prices. The company is also proposing to NATO the launching of a NATO 4 satellite built in the United States.

Arianespace also makes mention of contacts with the French Ministry of Defense for launching several SAMRO military reconnaissance satellites, construction of which has been under study for several years. These satellites will utilize the platform of the CNES observation satellite, SPOT, fitted out with new instruments for taking pictures.

Rockets in Production, Manufacturers Involved

Paris AIR ET COSMOS in French 2 Jan 82 p 27

[Article by Pierre Langereux: "Twenty-four Ariane Rockets in Production"]

[Text] Construction of 24 Ariane rockets for launchings planned during the first 5 years of its utilization, up to the middle of the decade, is now committed.

These include the four rockets of the development program utilized for the flight tests (L 01 to L 04) from December 1979 to December 1981, as well as the first 20 rockets of the series ordered for operational flights (L 5 to L 24) from the middle of 1982 to the middle of 1985, that is, during the first 40 months of commercial exploitation.

For the first operational launches--"the promotional series"--a first lot of six rockets in the series (L 5 to L 10) was put into production by the ESA in April 1978. This operational series, which initially comprised five rockets, was later expanded to six, to include one spare which was recently allocated to an operational launch for the Intelsat organization. These six "promotional" launches are thus intended to place three INTELSAT 5 (F 6 to F 8) satellites into orbit, as well as the European MARECS B, SIRIO 2, EXOSAT and ECS 1 and AMSAT/OSCAR, the German radio amateurs' satellite. Launching of the French TELECOM 1A telecommunications satellite, to replace the SPOT 1 satellite, is also contemplated for 1984. All these launches are planned between the beginning of 1982 and the beginning of 1983.

Arianespace next assumed responsibility for building the rockets in the series intended for succeeding operational launches. A second lot of four rockets in the series (L 11 to L 14) was ordered in April 1979 for launches planned between the middle of 1983 and the beginning of 1984. Recently a third lot of five rockets in the series (L 15 to L 19) was placed in production for succeeding launches planned up to the end of 1984.

From 1982, Arianespace begins long term stockpiling for a fourth lot of five serially produced rockets (L 20 to L 24), which should be ordered during the third quarter of 1982, or perhaps sooner, considering the very favorable development of the market. These rockets will serve operational launches up to the middle of 1985.

The first 11 rockets produced, for the flight tests and promotional series will all be of the present Ariane 1 type, which will be used up to the middle of 1983. Starting then, in fact, the new Ariane 2 and 3 versions, with improved performance, which will be built within the scope of the second serially produced lot (L 11 to L 14) and subsequent lots, will be placed in service.

Only starting with the fourth in the lot series (L 20 to L 24) will the new Ariane 4 rockets, which have still higher performance, be built; the first flight test of this series is planned for the end of 1985 (October or December) so that they may go into operational service in March 1986.

The Arianespace firm has been delegated manufacturing supervision of production by the ESA. For this Arianespace depends on seven European aerospace firms with which it has contracts as manufacturing general contractors. These are Aerospatiale (France) for tasks of manufacturing design and providing the first and third stages; SEP (France) for propulsion units; MATRA (France) for equipment compartment; Air Liquide (France) for the third stage tanks; ERNO (Germany) for the second stage; Contraves (Switzerland) for the nose; and Difesa e Spazio (Italy) for the solid fuel boosters. This industrial organization will be involved with the present (Ariane 1) and future (Ariane 2 and 3) versions.

At present production rate of the Ariane launchers--about five rockets a year--building on a new rocket should begin every 2½ months. This rate, considered ambitious yet a short while ago, is going to be revised upward as the marketing effort has taken off very favorably.

Arianespace, now in charge of production, will draw up the schedule of launcher orders at the end of the third quarter of 1982 in order to determine how much to increase the production rate.

The present status of firm orders booked (27) and those potential orders which are quite certain (8), or 35 satellites to be launched between now and the middle of the decade, necessitates increasing the production rate to at least 6 rockets annually and perhaps more right now. The manufacturing investments to be made to attain a rate of six to eight rockets a year are practically of the same order of magnitude, about 80 million francs, according to Arianespace. Moreover, European industry is ready to go to a rate of eight rockets a year. However, it must be noted that there is a limitation--unforeseen--on the production rate of Ariane rockets: simply stated, it is the time (18 months) required for delivery of the rolled sheet metal for the structure and the tanks. In fact, it requires special rolling mills (Sendzimir) which, in France, are limited in number and are at present working at full capacity to meet the great demand.

Manufacturers in the Ariane Program

The Ariane rocket development program of the European Space Agency (ESA) is being carried out with the National Center for Space Studies (CNES) as general contractor, with the following principal contractors: Aerospatiale, SEP, Matra and Air Liquide (France); Contraves (Switzerland); and ETCA-ACEC (Belgium). The ONERA has provided technical assistance.

The other manufacturers participating in the program are:

In France--Artus, Aubert et Duval, ACMH, Blomme, BSR, Cll-Honeywell Bull, Bronzavia, Cegedur, Clemessy, Comsip Enterprise, Crouzet, CSEE, Dassault-Breguet, Dembiermont, Deutsch, Dumez, Daher-Hugonnet, Industria, Intertechnique, Forgeal, Le Bozec et Gautier, Messier-Hispano, Motorola-France, SAFT, SAT, Sfena, Sfim, SILAT, Sintra, Sodeteg, Souriau, Sofrair, Snecma, Starec, Steiner, Socitec, Sofrance, Societe Commentryenne des Aciers Fins, Societe des Produits de l'Azote, SGE, Sarma, La Technique Integrale, Thomson-CSF;

In Germany--Bosch, Dornier, DFVLR, MAN, MBB, ERNO, Hansa;

In Belgium--Bell Telephone, FN-Herstal, SABCA, Valcke;

In Italy--Aeritalia, CGE-FIAR, Laben, Selenia, SNIA-Viscosa;

In the Netherlands--Fokker-VFW, Philips, NLF, Rosscher;

In the United Kingdom--Avica, British Aerospace, Ferranti, Marconi, Simon;

In Sweden--SAAB-Scania, Volvo;

In Switzerland--Battig, CIR, VFW Emmen-FFA-Pilatus, Cryophysics, AGIE;

In Denmark--Dannebrog Elektronik, Kampsax, Rovsing, Terma, Logstor, Bruun Sorensen;

In Spain--CASA, Duro, Sener

Background, Stockholders of Arianespace

Paris AIR ET COSMOS in French 2 Jan 82 pp 30-31

[Article by Pierre Langereux: "Arianespace, First Space Transport Company"]

[Text] Arianespace is the world's first commercial space transport company. Established 26 March 1980 on the initiative of the National Center for Space Studies (CNES), Arianespace is responsible for financing, production, and marketing of launchings for the Ariane rocket in its present version (Ariane 1) and for future improved models (Ariane 2, 3, and 4). It is a private corporation organized under French law which was entered upon the commercial register at Corbeil, Department of Essonne, on 8 April 1980. Its headquarters are at Evry, near Paris. It now has about 70 employees, but there will be about 115 by April 1982. The president-general manager of Arianespace is Frederic d'Allest, director of the "launcher" division of the CNES and by virtue of that fact the official responsible for the Ariane program. He is assisted by a secretary general, Roland Deschamps, and two deputy general managers, Klaus Iserland, for technical and commercial matters, and Herve' Loiseau, for administrative and financial matters.

The board of directors of Arianespace comprises 18 members, including the president-general manager and 10 directors of 7 companies (Aerospatiale, SEP, Matra, ERNO, Volvo, SABCA, Contraves) and of the CNES (2 representatives), as well as 6 auditors (ESA, CASA, Dornier, SNIA Viscosa, British Aerospace, and Credit Lyonnais). [Sentence as published]

Fifty-One French and Foreign Stockholders

The Arianespace company now has 51 French and foreign stockholders, including the CNES, which is the largest stockholder (34 percent) as well as 36 European aerospace firms which, together, hold 61.9 percent of the capital stock, and 14 European banks whose total participation amounts to only 4.1 percent. French stockholders, public and private, hold a majority of the stock (59.25 percent). However, all the leading manufacturers of 11 countries participating in the Ariane program are represented more or less in proportion to their participation in the development and production of the European launcher.

Arianespace has available a capitalization of 120 million francs, subscribed by the 51 European stockholders who are also committed to lend the company, if necessary, 30 million francs in the form of restricted current accounts. Besides, the special stockholders meeting held on 26 June 1980 unanimously authorized Arianespace to contract a loan of 29 million francs with six French banks: BNP, Credit Lyonnais, Societe Generale, Banque Vernes, Paribas and Banque Francaise du Commerce Exterieur [French Foreign Trade Bank]. Thus the company has 179 million francs of its own funds available.

In addition, a combined medium and long-term loan of 150 million francs intended to finance the building of a spare launcher has been agreed to by four European financial organizations: Credit National (France), Banque Europeene d'Investissements (Luxembourg), Kreditanstalt fur Wiederaufbau [Bank for Reconstruction] (Germany), and the Societe Nationale de Credit a l'Industrie in Belgium. That loan is intended for preliminary basic financing of the company's operations. The first installment of 75 million francs has been drawn, which makes available to Arianespace 254 million francs of permanent working capital (with the 179 million francs of its own funds) for its activities.

This basic financial structure enables Arianespace then to limit itself to short term "construction" loans depending on its production schedule and accounts payable or receivable. Methods of payment in the form of medium term "purchaser credit" are also being proposed by Arianespace, its principal bankers and the specialized organizations for foreign trade (COFACE) to help customers finance their orders.

Arianespace's order backlog, which at the end of 1980 (6 months after the company's founding) was still only 1.4 billion francs, now amounts to 2.4 billion francs in firm, signed contracts, of which 40 percent are "exports" (that is, outside the EEC). This corresponds to launching 3 heavy satellites of the Ariane class at $50 million each and 6 medium "semi-Ariane" class satellites at $24-25 million each, among the 13 firm launching orders now held by Arianespace. To these there will very soon be added Intelsat's new order, amounting to $93 million, for launching two more Intelsat 5 satellites in 1985, which will increase the total orders on the company's books to nearly 3 billion francs.

Arianespace predicts that the financial break-even point will be attained during the second year of its launching activities, that is, during the 1984 fiscal period. Arianespace will in fact assume responsibility for Ariane rocket launchings in the middle of 1983, beginning with the 11th launcher

(L 11), the first four test rockets being part of the development program managed by the CNES and the first six serially produced rockets being the responsibility of the ESA in the scope of the "promotional series." All operational launchings thereafter effected will be the responsibility of Arianespace. Frederic d'Allest, the president-general manager predicts that the company will realize an annual business volume of 1.4 billion francs in 1984 and on the order of 2 billion francs in 1985 (current francs).

Arianespace has already forged the first links of a vast commercial network which extends over practically all the continents: certainly Europe, but also India, Australia, Latin America (Brazil, Colombia and so forth), the Arab countries and especially the United States. Arianespace has delegated to the American Grumman Aerospace Company responsibility for promotion of the European launcher in the United States and it has assigned to the OFEMA [French Office for Export of Aeronautical Equipment] responsibility for representing its interests in other countries.

Twenty-five to 30 Percent of the Worldwide Launching Market

Arianespace actually expects to capture 25 to 30 percent of the worldwide market for satellite launchings during the 1983-1990 period, in which launchings of about 200 satellites are contemplated worldwide (excluding the countries of the East) for installation or replacement of space systems (see AIR ET COSMOS No 791). About 20 percent of those are launchings into low orbit of from 600 to 1,200 km for scientific or observation satellites, both civil and military, and 80 percent of the launchings are for geostationary satellites (at 36,000 km) for meteorology, telecommunications and direct television (starting in 1985). Telecommunications satellites which have experienced an explosive expansion (25 percent annually for Intelsat) dominate the present market. Now, Arianespace is in an optimum position precisely for geostationary launches.

The market is divided geographically as follows: 36 percent of launchings for the United States, 29 percent for Europe (ESA and two-country programs), 14 percent for international organizations (Intelsat, Inmarsat, Eumetsat, and so forth), 10.5 percent for developed countries (national programs) and also 10.5 percent for developing countries (national or regional programs). In view of the fact that the European market by itself already constitutes a third of the worldwide market and knowing that now an Ariane option is required in practically all international invitations to bid, Arianespace's objectives therefore do not appear unrealistic.

A 25 to 30 percent share of the worldwide market should represent, for Arianespace, 50 to 60 satellite launchings in 8 years, that is, a business volume of $1.5 to $1.8 billion out of a $6 billion market. Moreover, the company already has practically realized a quarter or a third of this objective, since at the beginning of 1982, it can count on 15 firm launches, even though the European launcher is only completing its qualification tests.

It therefore appears quite probable that between now and 1990 Arianspace will attain--indeed even surpass--its planned objective.

Table 1. Participation of Arianespace's Stockholders

	[in percent]
France	59.25
CNES	34.00
Aerospatiale	8.50
SEP	8.50
MATRA	3.60
Air Liquide	1.85
Comsip	0.10
Crouzet	0.10
Deutsch	0.10
Intertechnique	0.10
SAFT	0.10
Sfena	0.10
Sfim	0.10
Sodeteg	0.10
Credit Lyonnais	0.50
BNP	0.01
Paribas	0.40
Banque Vernes	0.20
Societe Financiere Auxiliaire	0.49
Valorind	0.40
Germany	19.60
MAN	7.9
ERNO	5.2
Dornier	2.8
MBB	2.8
Dresden Bank	0.3
Bayerische Vereinsbank AG	0.30
Westdeutsche Landesbank Girozentrale	0.30
Spain	2.5
CASA	1.9
Sener	0.6

	[in percent]
Belgium	4.40
SABCA	2.4
ETCA-ACEC	1.3
FN	0.7
Italy	3.60
SNIA-Viscosa	1.6
Selenia	0.90
Aeritalia	0.90
Instituto San Paolo di Turino	0.20
Switzerland	2.70
Contraves	2.15
CIR	0.15
FFA	0.10
Union des Banques Suisses	0.30
United Kingdom	2.40
British Aerospace	0.95
Ferranti	0.95
Avica	0.30
Midland	0.20
Sweden	2.40
Volvo	1.60
SAAB-Scania	0.80
Netherlands	2.20
Fokker	1.90
Allgemene Bank Nederland	0.30
Denmark	0.70
Rovsing	0.50
Handelsbank	0.20
Ireland	0.25
Adtec	0.15
Aer-Lingus	0.10

Launch Site Diagram

Paris AIR ET COSMOS in French 2 Jan 82 p 35

[Article by Pierre Langereux: "ELA 2--A Second Launch Pad in Service in March 1985"]

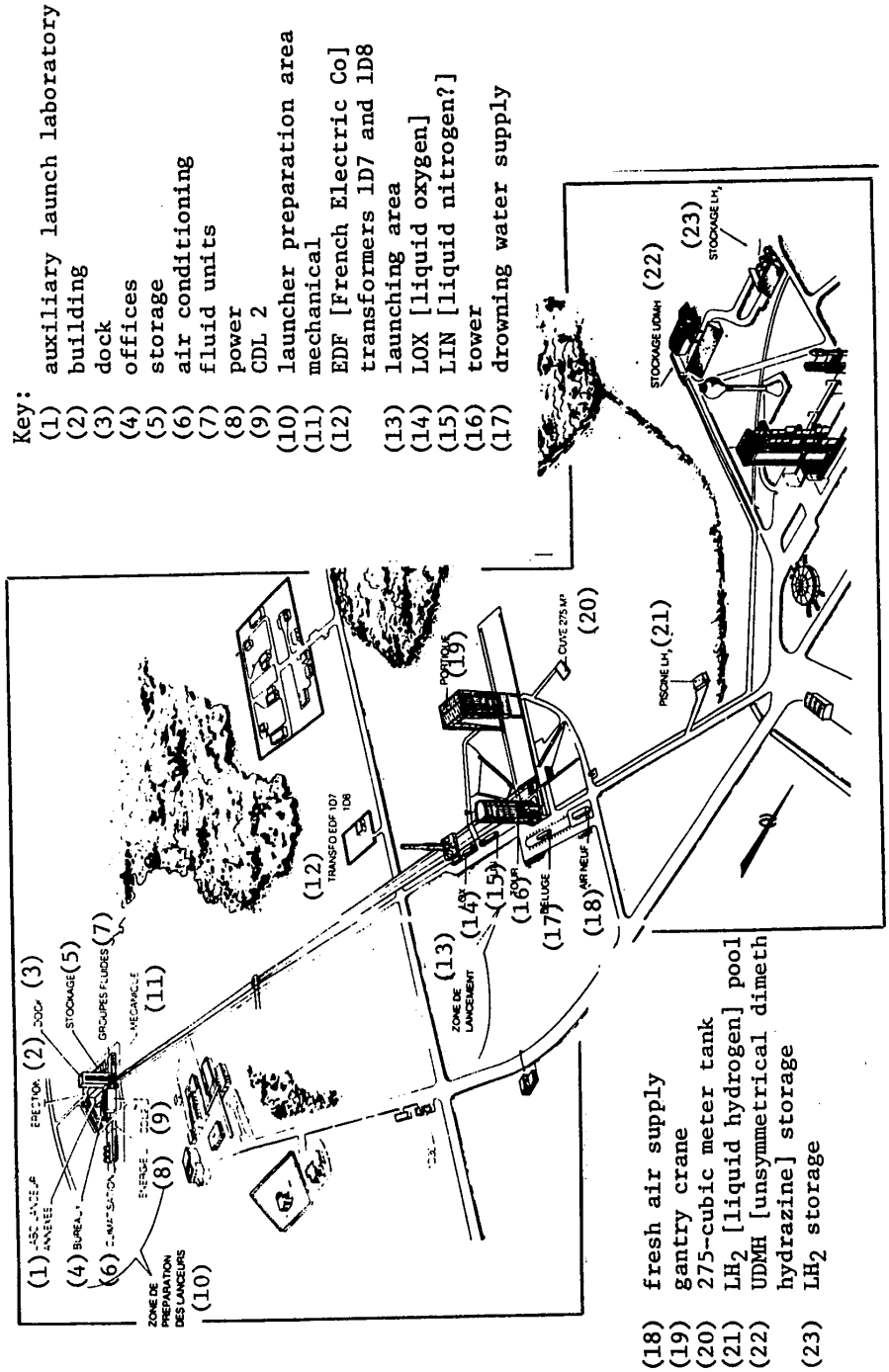
[Text] The rate of operational launchings now planned, counting only firm orders, will grow from four annually in 1982 to five annually in 1983, six in 1984, and then six or seven, or even more, starting in 1985. Actually there are already 6 firm launchings and no fewer than 10 options for 1985.

By the middle of the decade, this planned workload will have saturated the present capacity of the ELA 1 launching ensemble at Kourou, even when the launch preparation time is reduced (from 3 months at present to 7 weeks in 1984) and taking into consideration numerous double launches and increased launching capacity of the European rockets.

Therefore it will be absolutely necessary to have available a second launch pad--the ELA 2, whose entry into service is now set for March 1985, which is a year later than originally planned, taking into account the comparable delay experienced by the development program (see AIR ET COSMOS No 814).

It will be possible for the second launch ensemble, the ELA 2, to attain a steady rate of 10 launches a year, but that will require additional investment: human (launching teams) and equipment (payload preparation bays, fuel storage facilities, transport facilities, and so forth). Therefore, in the beginning one can count on only three launches a year from the ELA 2, in addition to the five or six a year made possible by the ELA 1 (which will remain in service until 1987). This should make it possible to easily meet the predicted demand in 1985.

The possibility of some customers withdrawing and inevitable delays in satellite readiness must be considered. However, to avoid excessive laxity in observing the launch dates stated by customers Arianespace is introducing into its contracts a "penalty" clause which varies, depending upon the date at which schedule modifications are announced.



Key:
(1) auxiliary launch laboratory
(2) building
(3) dock
(4) offices
(5) storage
(6) air conditioning
(7) fluid units
(8) power
(9) CDL 2
(10) launcher preparation area
(11) mechanical
(12) EDF [French Electric Co] transformers 1D7 and 1D8
(13) launching area
(14) LOX [liquid oxygen]
(15) LIN [liquid nitrogen?]
(16) tower
(17) drowning water supply
(18) fresh air supply
(19) gantry crane
(20) 275-cubic meter tank
(21) LH_2 [liquid hydrogen] pool
(22) UDMH [unsymmetrical dimeth hydrazine] storage
(23) LH_2 storage

Competition With American Launchers

Paris AIR ET COSMOS in French 2 Jan 82 pp 33, 35

[Article by Pierre Langereux: "Arianespace Proposing Launchings To Order"]

[Text] Under present circumstances potential customers have a choice among three launchers for their satellites, Arianespace's president, Frederic d'Allest, explained recently:

--To rely on the American Shuttle which will offer the lowest price ($16 to $18 million with launching services) during the first 3 years of operational service (from October 1982 to October 1985); but which also during that time will present serious risks of delay and operational unavailability because of the large reduction in the number of flights (only 28 between now and 1985); or

--To stay with a proven launcher such as the American Delta (more than 140 launchings) which is more readily available than the Shuttle but whose price is distinctly higher ($25 million at the beginning of 1982) than that of the Shuttle or the Ariane for equal performance. The Atlas-Centaur launcher has also proved itself but that rocket is now at the end of its career: it has few customers (except Intelsat and perhaps the U.S. Air Force also) because its performance has not evolved sufficiently and its price is very high ($61 million per launching); or

--To choose the Ariane, which is beginning its career but whose conventional design limits the technical risks and whose price is intermediate ($25 to $30 million for a medium satellite of "semi-Ariane 3" class or $45 to $50 million for full capacity) between that of the Delta and the Shuttle, with comparable performance, and in addition, with better availability and a potential for increased performance and cost reduction which is highly advantageous in comparison with the U.S. rockets.

The advantages of the European launcher, moreover, are already being demonstrated since it has just won three important contracts in the United States in less than a month in the face of competition from the Shuttle and the Delta. The Ariane 3 rocket which has been ordered in fact offers performance superior to that of the new Delta 3920, whose entry into service is planned for the middle of 1982, by about 100 kg of additional payload, which is decisive for customers. This actually makes it possible to add redundant channels and amplifiers for increased reliability or to carry more fuel to increase service life, as was explained by Roger P. Vallo, president of GTE Satellite Corp., an Arianespace customer.

The European launcher's trump cards in the face of competition from the Shuttle, the only one which will remain at the end of the 1980 decade, are at the same time technical, commercial, and financial, d'Allest explains.

The Ariane's Trump Cards

The Ariane has numerous technical trumps to play against the Shuttle which is poorly suited to high orbit missions, especially launchings into geostationary orbit.

The Ariane makes possible a process of direct injection into geosynchronous transfer orbit, the passage into geostationary orbit being provided by the apogee motor incorporated in the satellite. In contrast, the Shuttle necessitates, in addition, a perigee motor which is put into operation in accordance with a relatively complex procedure: first, the entire assembly must be deployed out from the hold and then moved away from the Shuttle before ignition of the propulsor whose guidance is generally gyroscopic (except in the case of the expensive IUS with inertial station); the entire phase of placement into orbit by the Ariane is controlled by an inertial station. In addition, considering the relative distance of Cape Canaveral (28.5°) from the equator compared with that of Kourou (5°) injection by the Shuttle must also include a large correction of the plane of the trajectory (for example, by means of reignition of the perigee motor in flight), all things which affect the reliability of launchings and precision of injections. Arianespace's president thus believes that geostationary satellites are penalized by more than a year of service life when they are launched by the Shuttle instead of the Ariane.

Ariane facilitates incorporation of satellites in the rocket even if they were designed for the Shuttle or Delta. In fact, Arianespace has made special study of the methods of incorporating payloads in the Ariane (explained in the "Customer's Manual") in order to reduce interface problems.

The European rocket permits double launches, which considerably reduces the price for launching medium satellites (of "semi-Ariane" class) in comparison with the Delta, and this while retaining ease of incorporating each satellite, thanks to the special adapter (SYLDA [Ariane double launching system]) made by Aerospatiale, which enables each satellite to be treated completely independently.

In addition Ariane provides a favorable environment for satellites as far as payloads in flight are concerned (acoustics, acceleration, vibration, pollution and so forth). This results in lower stresses upon the satellite's (lighter structures, hence a gain in the payload), which influences costs. Arianespace estimates that double launching of Delta class satellites with the Shuttle is about $4 million more expensive than with the Ariane.

These constraints of incorporation and flight are important for customers. Intelsat has in fact abandoned launching its Intelsat 5 satellites with the Shuttle because of the technical difficulties and hence the additional cost (not to mention delays) which they represented (see AIR ET COSMOS No 886).

Arianespace is also careful to stay abreast of developments in the market; that is, to adapt Ariane rocket performance and services to satellite development at the technical and commercial levels. Hence, there is the development underway of an "Ariane family" which, in 4 years, will enable the launching

capacity to be doubled at proportionately lower costs. And this without reconsideration of the launcher's design, and therefore with minimum risks.

The performance in geostationary transfer orbit will thus increase from 1.75 tons with the present rocket (Ariane 1) to 2 and 2.4 tons, respectively, with the improved models (Ariane 2 and 3), and then to 4.3 tons with the new Ariane 4 rocket which will enter service in the beginning of 1986.

Ariane at present also offers greater availability although this advantage is going to grow less distinct in the next few years with the entry into service of a fleet of four or five Shuttles as NASA plans. However, the fact remains that the Shuttle has not passed the hurdle of a major technical problem which will prevent the flight of the entire Shuttle fleet for some time, as can be seen now with airplanes. Moreover, this has led to the decision by NASA to form a "mixed fleet" of Shuttles and conventional launchers (see AIR ET COSMOS No 887).

The European launcher's commercial advantages are also decisive. Arianespace is actually a commercial company where "the customer is king" according to the policy reiterated by d'Allest, who proposes to sell rockets like airplanes, that is, with consideration given to the problems of customers, particularly, as far as launching windows, schedules, and facilities for payment and so forth are concerned. In this regard the company is greatly aided by its banker stockholders who may, in certain cases, offer "easy" payments (COFACE credits), which will, for example, enable a customer to pay for launching its satellite over 5 years with revenues from exploitation!

Arianespace also guarantees to all its customers, in the event of a launching failure, priority for relaunching another satellite within a maximum of 10 months after demand has been made by the customer. In addition, clients may take out an insurance policy of guaranteeing the costs in the event of failure for a premium of about 10 percent of the launching price. But the Ariane's reliability is supposedly guaranteed at the same level as that of American rockets whose average success rate is about 87 percent. Ariane is allowing for an average of 1 failure out of 10 firings.

Such is the entire difference between the "made to order" service offered by a commercial company like Arianspace and the "take it or leave it" service provided by a [government] administration like NASA, d'Allest explains.

The financial advantages of the Ariane, in contrast, are less obvious. The European rocket at present is more expensive than the Shuttle, although the prices proposed in 1980 for launching Intelsat 5 satellites were comparable.

But the Shuttle prices are going to be substantially increased at the end of the "promotional" period (October 1985), NASA has in fact given a glimpse of an increase on the order of 64 percent in the launching rates of the Shuttle in order to absorb operating expenses fully.

The launching prices for the Ariane are also going to change. In particular, the prices for launching by the new "Ariane 4" model European launcher will be renegotiated, d'Allest announced.

The Ariane is nevertheless not on a parity with the Shuttle. Both launchers, as a matter of fact, have the benefit of government financial support, but each to a very different extent. In order to promote the Ariane rocket on the international market, the European countries have agreed to pay a little more for their launchings than non-Europeans will pay. In contrast, the Shuttle benefits from very large subsidies from the U.S. Government: construction of the Shuttles ($1 billion each) is in fact entirely financed by NASA, that is, actually by the American taxpayers and that enormous expenditure is not included in the price of Shuttle launching services.

It is only under such conditions that the Shuttle is at present competitive with conventional rockets, American and European!

It remains to be seen whether that policy will be maintained in the future or whether, on the contrary, the Americans will come around to establish a "true price" for their recoverable launcher which would result in a corresponding conformity of the prices of European launchers with the true market price for launchers.

Technical Aspects of Ariane 2, 3, 4

Paris AIR ET COSMOS in French 2 Jan 82 pp 37, 39, 41, 43

[Article by Pierre Langereux: "Ariane 2 and 3 Rockets in 1983 and Ariane 4 in 1986"]

[Text] Europe has undertaken development of an Ariane family of launchers which, between now and the middle of this decade, will permit tripling of performance and reduction by 60 percent of the price of launchings compared with the present basic version (Ariane 1).

Development of the new Ariane 2 and 3 versions was decided upon in 1980 to improve the European launcher's performance (+ 50 percent) and reduce the price of launchings (-25 percent), which may be still further lowered (-10 percent) if recovery of the first stage proves feasible and useful.

The Ariane 2 and 3 models should enter service at the end of 1983, in September or December (L 12 or L 13 launchings). The first Ariane 3 firing could take place with the launching of the French Telecom 1A satellite now planned for September 1983 (L 12). It is planned to build at least 12 of these new models for launchings up to 1986, when the Ariane 2 and 3 will be succeeded by a new and more powerful model, the Ariane 4.

The Ariane 2 and 3 incorporate several improvements over the basic launcher (Ariane 1):

--A 9 percent increase in the thrust of the Viking 5 motors of the first stage to 66 tons at takeoff and 72 tons in space (compared with 61 and 66 tons, respectively for Ariane 1), and of the Viking 4 motors of the second stage to

76 tons in space (compared with 70 tons) by increasing the combustion pressure of the motors to 58.5 bars (compared with 53.5-54 bars);*

--An increase of more than 25 percent in the mass of cryogenic fuels of the third stage, which will carry 10.5 tons of liquid hydrogen and liquid oxygen (compared with 8 tons) by lengthening the tanks by 1.3 meters;

--An increase of 3.5 to 4 seconds in the specific impulse of the third stage HM 7 motor by raising the combustion pressure to 35 bars (compared with 30 bars) and lengthening the divergent cone of the nozzle by 150 millimeters, which raises the sectional ratio to 80 (compared with 60). The thrust of the motor remains the same (6 tons) but the burn time reaches 700 seconds (compared with 540 seconds);

--Expansion of volume available for the payload by modification of the upper portion of the nose (semicones) which, however, retains the same diameter (3.2 meters) and length (8.7 meters).

In addition, the Ariane 3 version has two solid fuel boosters, 8 meters long and 1 meter in diameter, weighing 8.7 tons, of which 7.3 tons are solid fuel (Flexadyne), each delivering thrust of about 70 tons (maximum of 770 kilonewtons) during burn time of 28.3 seconds. They are ignited at takeoff and jettisoned during the subsonic flight (250 meters per second). These boosters are constructed by Difesa e Spazio (Italy) with the collaboration of MAN (Germany) in the separation system and reinforcement of the motor support necessitated by the additional stresses.

The Ariane 3 launcher's performance in geosynchronous transfer orbit has thus been increased to 2,420 kilograms, or 2,460 kilograms for a single launch.

But, taking into account results achieved during the Ariane 1 flight tests the CNES has recently decided to reduce the "guidance reserve" (remaining fuel planned for compensating variations in the operation of the motors), which results in a weight gain of 200 kilograms. It is also planned to lighten certain elements (equipment compartment, batteries and so forth) which will result in a further gain of 15 to 20 kilograms.

This is manifested by a significant increase in the payload which the Ariane 3 can place into geosynchronous transfer orbit--a payload which now reaches 2,560 kilograms for a single launching, and two times 1,190 kilograms for a double launching with the SYLDA (180 kilograms). The Ariane 3 will thus have a launch capacity distinctly greater than that of competitive launchers for payloads of these kinds (Shuttle or Delta-PAM D).

The Ariane 2 rocket, which incorporates the same improvements as the Ariane 3, less the solid fuel boosters, will be able to place about 2,100 kilograms into geosynchronous transfer orbit.

* The combustion pressure of the Viking motors of the Ariane 1 in the four test firings were, successively, 54 bars (L 01 and L 02), 53 bars (L 03) and 53.5 bars (L 04). It will remain at this 53.5-bar level for all operational flights of the Ariane 1.

The most powerful Ariane 3 will weigh 233 tons, with a thrust of 404 tons at takeoff, whereas the Ariane 2 will weigh 214 tons and develop thrust of 264 tons.

Ariane 4: Competitor of the Shuttle

Development of the new Ariane 4 rocket, upon which France decided on 15 October 1981 (see AIR ET COSMOS, No 878), is at present subject to the other European countries, which have declared themselves very favorable to the project, joining in. At that point the ESA will have no difficulty in amassing the quota contributions necessary to begin the project--cost of which is estimated at 1,500 million francs (1981 prices) with 20 percent contingency margin in 1982. This also includes fabrication of a first Ariane 4 launcher for the flight test planned in October or December 1985 for a payload which will be open for bidding (see boxed text). The Ariane 4 rocket should enter service in March 1986 to compete with the Shuttle more effectively than the foregoing models, up to 1992 at least. It is even foreseeable that the Ariane 4 rocket will remain in service for at least 10 years.

This new version of the European launcher, the most powerful, will be characterized by very great flexibility of use. Depending upon the configuration it will in fact be able to place from 2 to 4.3 tons in geosynchronous transfer orbit, it will have an assortment of nose cones (contraves) of large diameter (4 meters) and lengths adapted to the payloads (9.6, 11.8 or 13.1 meters), and also a new adapter for double launchings, the SPELDA (External Support Structure for Ariane Launchings) a part of which functions as aft neck of the nose cone. Construction of SPELDA, estimated at about 30 million francs, was the subject of an invitation for beds, which were submitted by the British Aerospace Dynamics Group (Great Britain), Dornier (Germany), and Aeritalia (Italy). Selection of the manufacturer will be made in the beginning of January 1982, taking into consideration the willingness of the British to increase their participation in the Ariane 4 program to 4 or 5 percent instead of the present 2.4 percent.

The Ariane 4 launcher is directly derived from the preceding Ariane 3, whose three stages it retains--the first being lengthened--and to which there are added solid fuel and/or liquid fuel boosters. This configuration was adopted--in preference to the addition of a fifth motor to the first stage--in order to reduce technical risks while still further improving performance. However, this launcher configuration requires modification of the launch pad of the new ELA 2 launching station which, in every way will be adapted in particular to the Ariane 4.

The two stages are precisely those of the Ariane 3 with, however, structural reinforcement to sustain the additional stresses.

The first stage of Ariane 4 resembles that of Ariane 3 with four Viking 5 motors, each with 66 tons of thrust at takeoff, operating under combustion pressure of 58.5 bars. But the tanks are lengthened by more than 6 meters (the length of the stage increases from 21.7 to 27.9 meters) for a 50-percent increase in the amount of fuel (UDMH [unsymmetrical dimethylhydrazine] and

N_2O_4 [nitrogen tetroxide]) which thus comes to 210 tons (instead of 140 tons as in the preceding versions). The first stage burn time is thus brought to 200 seconds (compared with 148 seconds).

In addition the new launcher will be selectively equipped, depending upon the mission, with solid fuel and/or liquid fuel boosters attached to the first stage and ignited at takeoff and then jettisoned in flight. This has entailed reinforcement of the first stage motor support to sustain the additional thrust of the boosters and an increase in the surface of the stabilizers to improve pilotability with liquid fuel boosters.

The solid fuel boosters initially are to be the same as those of the Ariane 3. But Italy offered to increase its participation in the program by improving the Ariane 4 solid fuel boosters which will henceforth be loaded with 8.3 tons of solid fuel (instead of 7.3 tons). These boosters are ignited at takeoff and each provides thrust of about 70 tons. Like the previous ones they are being made by Difesa e Spazio, in cooperation with MAN.

The liquid fuel boosters are entirely new. They are propulsors of 2.3 meters diameter and 16 meters length which carry 37.5 tons of storable liquid fuels (UDMH and N_2O_4) and each has a Viking 5 motor (with fixed nozzle) which delivers thrust of 66 tons at takeoff (like the first stage). The liquid fuel boosters are ignited at takeoff; they function for 135 seconds and are jettisoned at about 40 kilometers altitude (and are possibly recoverable). Incorporation of the liquid fuel boosters has been assigned by the CNES to ERNO (Germany), the motors being supplied by the SEP [European Propellant Company] (France). The selection of other manufacturers responsible for structures (tanks, skirts, and so forth) and equipment will be made in January 1982. Complete tests of the first stage with the liquid fuel boosters are planned for 1984.

In the most powerful configuration, Ariane 44L with four liquid fuel boosters coupled to the first stage, the new rocket will weigh about 460 tons, of which 415 tons are fuels, double the present launcher, with a total thrust of nearly 530 tons (8 Viking 5 motors of 66 tons each) and a launching capacity 2.5 times that of the launcher. [Sentence as published] Depending upon the configuration, the launcher will be from 56.9 to 60.4 meters long (compared with the present 47.4 meters).

The Ariane 4 launcher can thus--depending upon the number and type of boosters--be used in six different configurations, in order to launch any satellite whatsoever into low orbit (polar) and medium and heavy satellites into geostationary orbits. In particular, Ariane 4 will be able to place a large Intelsat 6 class satellite of 3,550 kilograms into transfer orbit and still have a reserve of 700 kilograms available for launching the improved Intelsat 6A whose construction is planned. It will also be able to launch a double payload consisting, for example, of a direct television satellite (five channels) of 2,450 kilograms and a telecommunications satellite of 1,450 kilograms with the SPELDA adapter (375 kilograms).

The maximum performance predicted for the Ariane 4 is at least 4.3 tons (guaranteed performance) into geosynchronous transfer orbit (180-35,900

kilometers, inclined 7°) from Kourou, or 5 tons into heliosynchronous orbit (circular at 800 kilometers, inclined 98.6°).

New Studies for Future Launcher

The configuration of the future European launcher which will replace the Ariane 4 at the end of the 1990 decade is now under study at the CNES which, incidentally, has just formed, with the DFVLR, a French-German task force to conduct this study jointly, and in liaison with the ESA, which is also conducting studies of this subject in the perspective of servicing a future European orbiting station derived (or not) from the Spacelab.

The problem of the future European launcher is indeed much vaster than simple definition of a successor to Ariane 4. The definition of the future European launcher is in fact tantamount to definition of future European space activities in the next 20 years. It is reasonable to believe that ability to compete with the Shuttle for access to geostationary orbits will remain the dominant element in the 1990 decade. It is also necessary to plan increased ability to compete in low orbit missions. The future European launcher must therefore do better than the Shuttle in geostationary orbit and nearly as well in low orbit. It is also possible that Europe will decide to give itself some independent capability for launching manned (and therefore recoverable) vehicles. The end result would thus be a launcher in two versions: one for conventional missions (possibly with an automated shuttle) and the other with increased reliability for flight of human crews with, necessarily, a recoverable, piloted shuttle.

Up to now, a two-stage Ariane 5 launcher, derived from the Ariane 4 but equipped with a new second stage having a large cryogenic motor of 60 to 80 tons thrust (HM 60 and HM 80) to place 10 tons into low orbit and 5.5 tons into geosynchronous transfer orbit has been contemplated for that dual purpose.

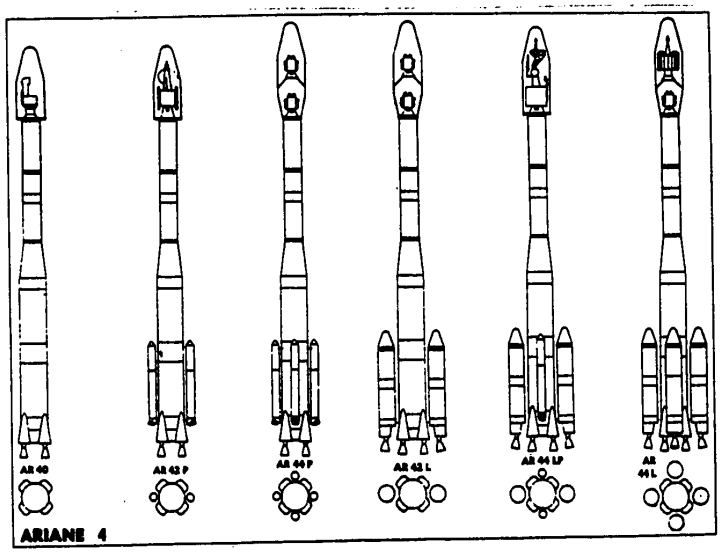
That study is continuing but with more ambitious objectives. Now it is a matter of placing 7 to 8 tons into transfer orbit and 15 tons into low orbit, particularly to launch a manned minishuttle of the HERMES class, or an automated orbiting station of the SOLARIS class.

The conception of the future European launcher has even evolved toward configurations very different from that studied up to now under the designation Ariane 5. However, the key element of that future rocket remains a large cryogenic motor, but of 90 to 100 tons thrust. The design of this motor now under study by the SEP, moreover, has been fixed. It will be a turbopump motor with branched flow (440 to 445 seconds specific impulse), less complex to develop than an integral flux motor.

Two schools of thought are at present competing to define the future European launcher. One involves a launcher "of Russian type" (Soyuz launcher) with four stages in a cluster, each with a cryogenic motor of 90 to 100 tons and a small solid fuel booster. The other concerns a rocket "of American type" (HLLV class) with attached elements, including two large solid fuel boosters of 100 tons thrust and a stage with cryogenic motor of 90 to 100 tons surrounding

a large fuel tank (liquid hydrogen and liquid oxygen). These launchers may be more or less recoverable.

These studies of future launchers are going to continue and be refined in the next few years, the objective being to offer a precise project to the European member countries in 1985 in order that the future launcher may be available about 1995, taking into account the time required for development (10 years).



The Ariane 4 can be used in six configurations, depending upon the boosters coupled to the first stage.

TEXTS OF BOXED MATERIAL

Box 1. Satellite for the Ariane Open to Bidding

A payload is now planned for the Ariane 4 rocket during the first flight test launching set for October or December 1985 from the ELA 2 launching field at Kourou. The launcher version foreseen is the hybrid Ariane 44 LP with two solid fuel boosters and two liquid fuel boosters which can place 3.8 to 3.9 tons into geosynchronous transfer orbit.

This launch capacity will be offered by the CNES and ESA "to the highest bidder," that is, to competitive bidding, which has never before been done in connection with a launcher.* There may be three or four "passengers" for this launching. The CNES is thus contemplating launching its geodesic satellite GRADIO along with several technological experiments (magnetic sensors, bearings, and so forth). The GRADIO satellite (1 ton) is said to be equipped with four ultrasensitive accelerometers of the ONERA [National Office for Aerospace Studies and Research] to improve, by an order of magnitude (1 to 2 milligals), gravimetric resolution of the entire globe.

*RCA recently sold the repeaters on one of its satellites at auction.

For its part the ESA contemplates launching its solar probe, DISCO, on this occasion. That project, which was the subject of a new study with a view to providing support for the extra-ecliptic ISPM solar probe, concerns observation of the sun's luminous variations in visible infrared and ultraviolet over a period of 6 years, the probe separating at 1.5 million kilometers from the earth.

Box 2. Hydrazine Hydrate for the Viking Motors

After the failure of the second test flight (L 02) the injectors of the Ariane rockets Viking motors were modified and manufacturing quality improved. Now "reduced dispersion" injectors are used and they are, in addition, subjected to a "hot" acceptance test by bench firing.

The principal modification in the Viking injectors, to eliminate recurrence of the combustion instability phenomenon at high frequencies (2,300 to 2,700 hertz) consists quite simply of enlarging (by some 1/10 millimeter) the injection port diameter. This has enabled combustion to be stabilized, but at the cost of degraded performance.

To restore performance to the original level, and even improve it for the future Ariane 3 and 4 rockets (combustion pressure 58.5 bars instead of 53.5 to 54 bars) without having recurrence of the previous incidents, it was decided to effect Viking combustion stabilization by chemical means. This time it was a matter of adding hydrazine hydrate to the unsymmetrical dimethylhydrazine (UDMN), which will also permit better cooling of the divergent cone of the nozzle. Thus, it is planned to add about 3 to 4 tons of hydrazine hydrate in the tanks but the CNES is awaiting the conclusion of tests--in particular, the study of possible secondary effects--before definite adoption of the procedure, tentatively in the first quarter of 1982.

Complete model studies of the combustion phenomena (and of instability) in turbopump motors at low pressure, moreover, have been pursued for a year at ONERA [National Office for Aerospace Study and Research] in cooperation with the SEP [European Propellant Company]. But the conclusion of the work must be awaited--in 2 years, perhaps more--before judging the results.

Box 3. Ariane First Stage Recovery Test in 1982

The CNES has awarded manufacturing contracts for construction of the recovery system for the first stage of the Ariane 1 rocket. The contract to function as general contractor has been given to Fokker (Netherlands), already participating in the Ariane program by fabricating the third stage motor support and interstage skirts. Fokker is at present responsible for design and fabrication of the system of recovery by parachutes with the Irvin firm (Great Britain) and Autoflug (Germany) as subcontractors to furnish the flotation cushions.

The problem consists of braking the descent of the 13-ton first stage (18.4 meters long and 3.8 meters in diameter), separated at about 53 kilometers altitude at speed of 2,100 meters per second, which causes it to reach a peak

altitude of 87 kilometers along a ballistic trajectory which ends with impact on the sea at about 340 kilometers from the launch site.

Recovery consists of fitting the stage with a cluster of parachutes located in the first-second interstage skirt. The operation proceeds in several stages: An extractor parachute will enable the pointing parachute to be deployed at about 6,000 meters altitude, then the main parachutes (2,600 square meters surface) will deploy at about 1,500 meters altitude, in order to reduce the speed at impact to only 10 to 15 meters per second. The stage should then float, thanks to inflatable balloons, until recovery ships arrive.

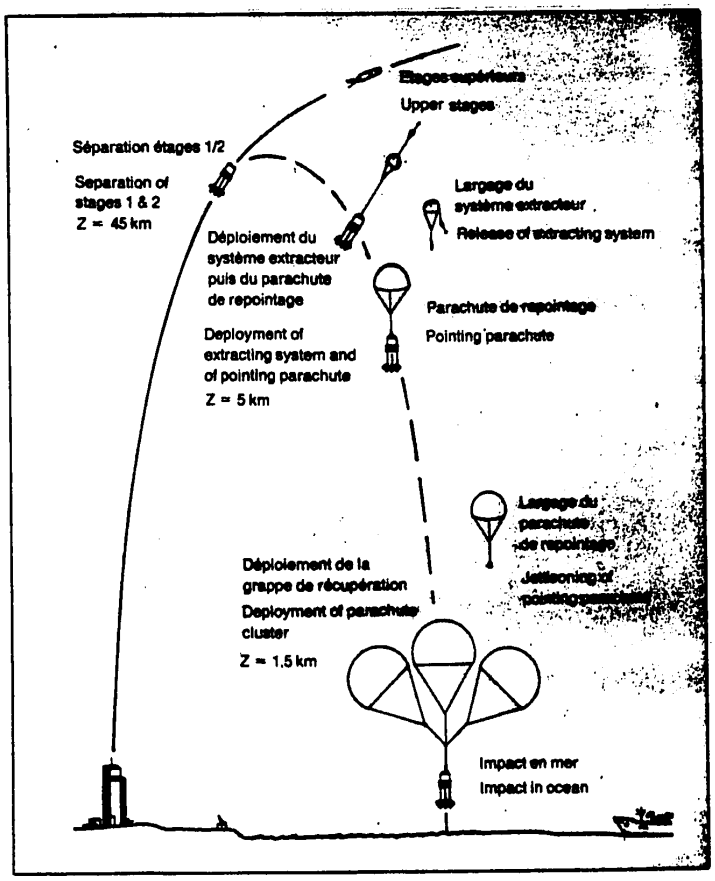
During the fourth test flight (L 04) of the Ariane rocket which just took place on 19 December 1981 the CNES had already tested the first phase of the operation; that is, tracking the stage (not braked) during its descent and locating it at sea. The descent was tracked by the Adour radars at Kourou and by telemetry stations aboard several ships, including the "Francis-Garnier" of the French navy (see AIR ET COSMOS, No 886). The ships were easily able to spot the stage, which was still floating although broken, its tanks apparently intact.

The CNES now contemplates proceedings with a complete recovery test with the braking system fabricated by Fokkers during the seventh Ariane launching (L 07) supposedly planned for October 1982.

The recovered stage will be decontaminated in Guiana before being sent to Europe for detailed analysis of the condition of the elements to be recovered (tanks, turbopumps, and so forth). The objective is to be able to reuse elements sufficiently without excessive expense for reconditioning, in order to reduce the price of a rocket launching by about 10 percent (or 2 million accounting units).

If the operation succeeds the recovery of the first stage will be a regular practice, starting in 1984.

But it is not at all obvious that with only a single test of recovery as planned the reliability and attractiveness of the operation will be definitely demonstrated, if one is to judge by the recovery of the Shuttle boosters which was not conclusive in the first attempt!



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