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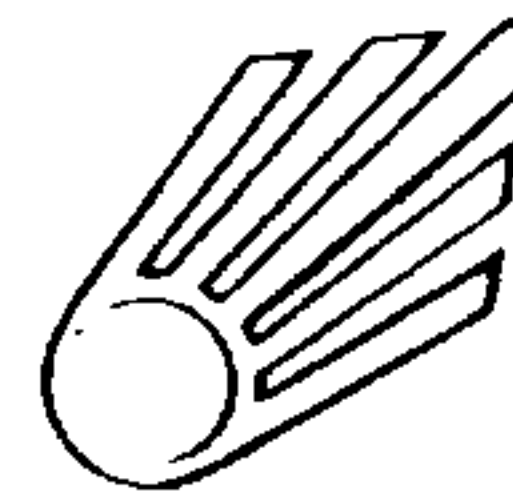
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Front Cover: Ariane 502 is prepared for its launch on 30 October 1997 when during main stage burning an excessive roll torque developed in what was otherwise a very successful flight. See p.204.

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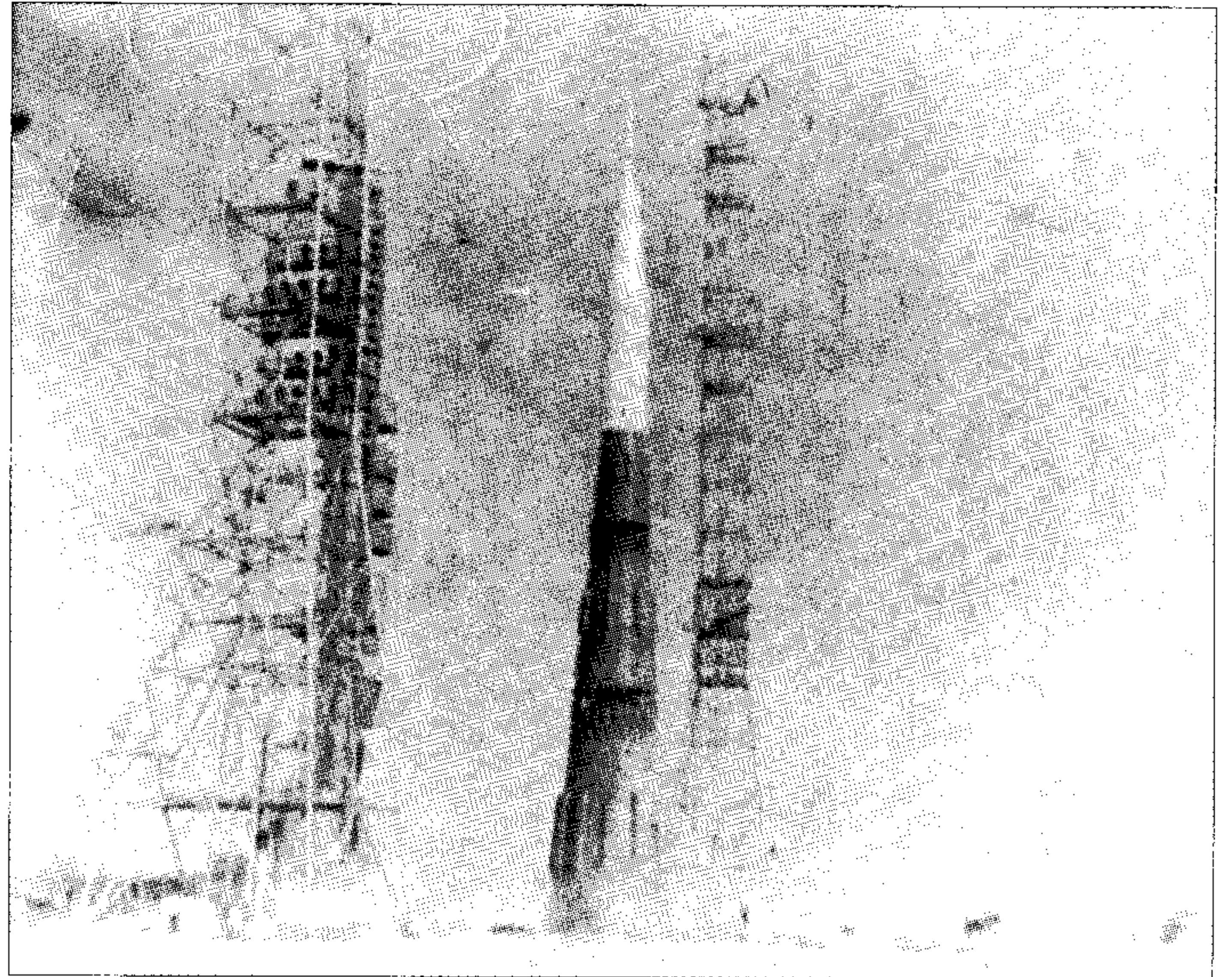
# The Decision To Go To The Moon

The View From the Soviet Union  
Part II

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BY ASIF A. SIDDIQI  
Philadelphia, USA

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An N-1 booster poised for launch in February 1969 on one of the two launch pads at Baikonur.  
DEN LEBEDEV

## Introduction

In 1960, Korolev's ambitious plans for lunar and interplanetary missions and the development of powerful boosters such as the N-1 received official 'seven-year plan' approval. But within a year the plan was modified with priority continued to be given to military programmes. President Kennedy's Congress speech of May 1961 with its commitment to a manned lunar landing might have had an effect on Soviet policy if only it had been taken seriously. On account of Soviet secrecy with its space plan, there was, by 1963, confusion in the West about whether or not a 'space race to the Moon' existed. Part II picks up on the story. (Part I appeared in *Spaceflight*, May 1998, pp.177.)

### Confusion in the Public Arena

As the Apollo programme gradually gained momentum, the public discourse on whether or not the Soviets were in a 'race to the Moon' reached its apotheosis in 1963. Much of this near-hysteria was set off by a letter from British astronomer Sir Bernard Lovell to NASA Deputy Administrator Hugh L. Dryden concerning future Soviet plans in space. Lovell had, between 25 June and 15 July 1963, toured a number of important aerospace facilities in the USSR and met a number of prominent scientists from the Academy of Sciences. Based upon his experiences, he informed Dryden in a letter dated 23 July that Academy President Mstislav V. Keldysh had informed him that the USSR had rejected "(at least for the time being)...plans for the manned lunar landing" [1].

Lovell's assertion set off a remarkable level of parrying back and forth between the US media and NASA as the latter sought to quell suggestions that NASA was in fact racing to the Moon by itself [2]. The hoopla in the United States was not reported in the Soviet press, although it is less certain if individuals such as Khrushchev, Keldysh, and Korolev themselves were kept abreast of the discourse in the US. The issue was further muddied by Kennedy's bold announcement in front of a United Nations audience on 20

September proposing the discussion of "a joint expedition to the Moon" [3]. Judging by the response in the Soviet press, the USSR was simply not interested: Kennedy's offer was publicly ignored. Khrushchev added to the confusion with another ambivalent statement on Soviet lunar plans made at the third World Meeting of Journalists in Moscow on 25 October:

At the present time we do not plan flights of cosmonauts to the Moon. I have read a report that the Americans wish to land on the Moon by 1970. Well, let's wish them success. And we will see how they fly there, and how they will land there, or to be more correct "moon" there. And most important—how they will get up and come back. We will take their experience into account. We do not wish to compete in sending people to the Moon without thorough preparation. It is obvious there would be no benefit from competition. [4]

Once again, Khrushchev's pronouncements were taken as an indication of the Soviets' lack of interest in the Moon.

It is difficult to speculate on the true nature of events actually occurring within the Soviet leadership at the time without access to still classified documents. But if we are to believe the Soviet leader's son, Khrushchev was close to making an about-turn in his thinking on the lunar landing issue. Sergey N. Khrushchev, then an engi-

neer at the Chelomey Design Bureau recalls that in the second week of September, just days after Kennedy's UN speech, his father for the first time openly spoke positively about jointly cooperating with the United States on a lunar landing project [5]. Previous overtures from Kennedy on this issue had been rejected outright as a result of the Soviet military's great reluctance to engage in any major joint space endeavour. Khrushchev, however, appears to have been steeling for a fight to change the military's position on the issue, certainly a difficult undertaking, given the kind of secrets that would be put at risk in implementing such a joint project. When his son argued that cooperation was simply a bad idea, the older Khrushchev replied:

"You don't understand that the Americans can design anything they want and our secrets will not be forever...and now that we have enough missiles they already know that we are strong" [6].

There is no doubt that Khrushchev's intentions were partly motivated by economic considerations. Surprised by Korolev's estimated cost of a lunar landing at the meeting in June, Khrushchev was already back-tracking on his lukewarm support three months before. The fact that Khrushchev was indeed having a change-of-heart is evidenced by his only public comment on Kennedy's speech. On 1 November, a little over



## LUNAR EXPLORATION

a month after the call for cooperation, Khrushchev told the press:

We consider with due attention to the proposal of the US President, that it would be useful if the USSR and the United States pooled their efforts in exploring outer space for scientific purposes, specifically for arranging a joint flight to the Moon. Would it not be fine if a Soviet man and an American woman flew to the Moon? Of course it would. [7]

The chance to address a cooperative venture never came. Before Khrushchev could respond, President Kennedy was assassinated on 22 November 1963. The new administration of Lyndon B. Johnson was significantly less interested in a joint lunar landing programme. Khrushchev also dropped the matter, never officially responding to Kennedy's UN speech.

### The Decision

Time was running out for Korolev. By the end of 1963, it had been over two years since Apollo had been put into full gear. In the intervening time period, his beloved N-1 rocket had been approved, but there was little consensus on what kind of payloads would be appropriate for the giant launcher. The original decree approving development of the N-1 had tasked the Ministry of Defense to formulate a set of missions for the use of new spacecraft for exclusively military purposes. But space as a component of strategic military policy had clearly not emerged at such an early period: the powerful N-1 simply did not "fit into then-existing notions of defense" of the USSR [8]. This predicament remained unchanged through the early 1960s as repeated requests from Korolev to the Ministry of Defense on what kind of military payloads could be used with the N-1 went unanswered.

The disinterest from the military was catastrophic for the N-1 programme as a whole. As the primary financiers of the N-1 project, the Ministry of Defense, for understandable reasons, refused to let loose its purse strings. With money completely drained, the N-1 project was close to shutdown by early 1964 with plants and Design Bureaus unable to sustain any kind of productive work. Faced with a serious situation, Korolev, in effect, took the problem out of the hands of the Ministry of Defense. If the military would not define a payload for the N-1, then he himself would. Since mid-1963, competition with the Apollo programme had eclipsed all other concerns at the Korolev Design Bureau. If his earlier appeals to Khrushchev on a lunar landing programme had fallen on deaf ears, then this time he would

invoke the threat of a rising American space programme. And there were many things to feel threatened about, all manifested in hardware rather than speeches. One Air Force general recalled by February 1964, Soviet administrators were shocked by "a series of reports that the Americans already had trainers for the development of a lunar landing" [9]. The impressive Saturn I booster, meanwhile, continued its remarkable run of successful test missions.

In early 1964, Korolev began to push his lunar landing programme as the central most important component of the Soviet space programme. By mid-February, this option had apparently been informally approved by the the Central Committee although without any official decree specifying so [10]. To accelerate the process Korolev and the other major Chief Designers met with Khrushchev himself on 16 March 1964 at which point Korolev extracted a promise from Khrushchev to commit to a full-scale lunar landing programme to compete with Apollo [11]. It is still unclear as to why the Soviet leader committed at this time, when just six months prior, he had been seriously considering cooperating with the US due to financial considerations. His son's observations on Khrushchev's views on the lunar landing allow some insight into his thinking at the time:

His feeling [on the lunar landing] was uncertain. He wanted to be ahead of the Americans, but for free. So when Kennedy announced the lunar programme he did not accept Korolev's pressure that we have to do the same. And in the end all of them [the Chief Designers] pressed him and said that it would be much less expensive than the Americans and that we have to do this, and [it was] then that he accepted this...So he approved it, but I don't think that he spent too much of his own time thinking about this and discussing it. It was not such a national priority as in the United States. [12]

From Korolev's perspective, there were clearly two equal parts to the decision: one was to compete with Apollo; and the second was to salvage the N-1 rocket from the scrap heap of history. The former was in many ways a major shift in vision from the Tsiolkovskiy-influenced ideas of Earth orbital stations leading to interplanetary flights. The latter was simply a management strategy.

The fact that Khrushchev's heart was not in supporting the lunar landing programme is borne out by the events of spring 1964. The February-March discussions were to have led to a formal decree of the Central Committee and the Council of Ministers.

This, however, was constantly delayed. As a result, money for the N-1 continued to remain tied up. In a letter dated 15 May, Korolev wrote to the leading administrators in the defense industry to include the N-1 as part of future funding allocations [13]. A second desperate letter was prepared by Korolev on 25 May addressed directly to Leonid I. Brezhnev, the Communist Party's 'curator' of space and defense industries at the time. Declassified thirty years later, the letter stands testament to the complete disarray in the Soviet human space programme by 1964; it began inauspiciously with the phrase:

"We have been wasting a lot of precious time on the N-1."

Through paragraph after paragraph Korolev goes down the litany of problems in the N-1 programme:

It will be sufficient to point out that the initial sum of 11 million roubles, which was decided on in 1964 by the Ministry of Defense for construction of the launch and technical position for the N-1, was at [their] discretion unexpectedly reduced to 7 million roubles and now to 4 million roubles overall. The Ministry of Defense has refused to finance further the construction of the N-1 despite the existing decrees. In May of the current year all the money will be used up for this [programme], and construction of the launch [complex] of the N-1 will completely stop in a few days. [14]

Korolev then makes a politically motivated plea:

This is an absolutely intolerable situation with the N-1, not only for Soviet science and technology but also for maintaining the priority of our state in that most important and difficult sphere, space, as the first socialist country in the world, the birthplace of great revolutionary ideas and a progressive nation leading the world in the socialist system. Nikita Sergeyeovich [Khrushchev] has always supported progressive science, and in particular, much new work in the sphere of new technology and space research, and he has said more than once that socialism—this is the hopeful launching pad from where all our rockets and ships will be launched. Very recently Nikita Sergeyeovich listened to and supported the proposal of a group of Designers to speed up work on the N-1. Two months have passed since then and nothing has been accomplished and nothing has changed with the N-1... [14]

He then mentions the US space programme:

The scope and progress of the work on 'big space' in the USA is a reason for great alarm. Already in May of this

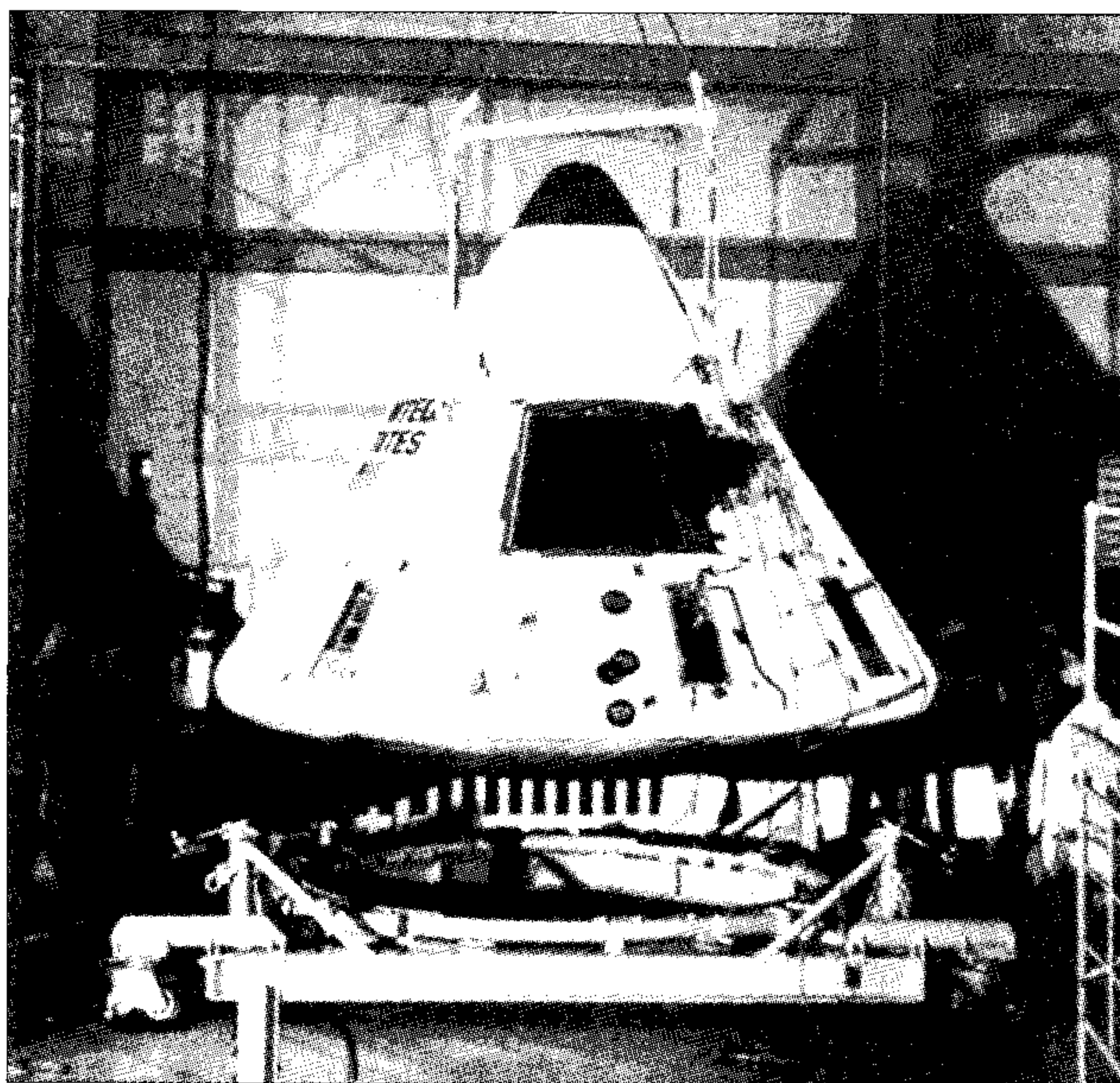


year, the USA is preparing to fly the two-stage 'Saturn' rocket with a full-scale model of the 'Apollo' ship designated as part of the project to land American researchers on the Moon. This model is without people on board now, but this flight undoubtedly will be followed by others. At the present the USA's 'Saturn' rocket takes a useful payload of 11-12 tons with a total mass of around 17 tons into an initial orbit around the Earth. In this, the USA has already surpassed the Soviet Union. To fly around the Moon with a crew (without landing) it is sufficient for the USA to double this load, for example, by using a single-docking method in the initial orbit. We have been working on such a theme, the 'Soyuz,' for a number of years, but unfortunately, just like the N-1, it has never received adequate support, and [the work on it] has not been fully satisfactory. If urgent additional measures are not adopted on the 'Soyuz' theme, the Soviet Union will lag behind the USA in this area too. [14]

Korolev finally ended with a focused and specific plea for a Soviet response to Apollo:

The USA is planning to land people on the Moon in 1969 (instead of the earlier date of 1970) and according to their plans, they will be in a position to fly around the Moon (in 1966); in 1967 the USA expects and evidently will have a working variant of the 'Saturn-5' with a launch mass of 2,700-3,000 tons, at which time the USA will be able to fly into space many times without limitations. It is possible to visualise the following scenario: what is to prevent the USA from accelerating its work a little bit (which is of enormous scale and part of a well coordinated plan), to not only fly around the Moon, but also to land men on its surface in 1967, the year of the fiftieth anniversary of the first Soviet state on our planet? There are three years left to that momentous date. In this time, we can pay attention to and organise our work to solve the problem of landing Soviet researchers on the surface of the Moon and secure their return to Earth... [15]

According to archivists, the letter, although completed, was never sent to Brezhnev. On 28 May 1964, the first dummy Apollo spacecraft was inserted into Earth orbit by the sixth Saturn I booster [16]. For those within the know in the Soviet space programme, the contrast between the obsolete Vostok and the flying Apollo was crystal clear. The impetus to approve Korolev's programme, if on shaky ground before, now had a more imposing imperative. Within two months, the USSR Council of Ministers and the Central Committee finally signed two major decrees: the first one on 19 June guaranteed additional



The instrumented Apollo command module that was successfully launched into orbit in September 1964 by the Saturn SA-7 booster. Following the successful launch of Saturn SAC-6 with an Apollo command module in May 1964, the Soviets took Apollo 'seriously' and Korolev's lunar programme was guaranteed funding for continuing development of the N-1 rocket. On 3 August 1964, the plan to land a Soviet cosmonaut on the Moon was officially approved.

Photo: US INFORMATION SERVICE

funding for the N-1 lunar rocket; the second one (no. 655-268) on 3 August 1964 officially called for the landing of a Soviet cosmonaut on the Moon before an American one [17]. The second decree, a macro-level policy statement on the entire space programme entitled "On Work Involving the Study of the Moon and Outer Space," specified that the landing would be in the period 1967-68, a sufficient margin before the Apollo deadline.

## Conclusions

Three years and countless meetings and discussions after President Kennedy's May 1961 speech, the Soviet Union committed itself to landing a cosmonaut on the Moon. It may have been a direct response to the rapid progress of the Apollo programme, but it was a decision that had been dragged out interminably by shifting political factors. There were six factors which played significant roles in the inexplicable delay from 1961 to 1964 to seize the offensive in the 'race to the Moon.' These were:

- The fact that although Communist Party mouthpieces may have paid lip service to the glories of the space programme in the 1960s, internally at least, space exploration was not a central tenet of Soviet state policy, but rather an adjunct to it;
- The strategic missile build-up in the 1960s which was a bottomless pit for state financing, thus diverting money from the space programme;
- The post-Sputnik and post-Vostok euphoria which prevented both designers and politicians from realising the seriousness of the US commitment until

1963;

- The delays in the N-1 lunar rocket project due to the continuing reluctance of the military to find any use for it;
- The battles between the principal space designers, in particular Korolev, Glushko, and Chelomey, which prevented a unified effort;
- The concern over the high expense of a landing programme, compounded by a nationwide agricultural crisis, which prompted an examination of a joint project.

The August 1964 decision to go to the Moon essentially changed the nature of the Soviet space programme. If in the early 1960s there was a semblance of following an ordered path into the cosmos, for all appearances and purposes that framework disappeared. In came a single-objective programme, beset by economic, managerial, and political difficulties. Much like Apollo, the N-1/L-3 programme was an anomaly, a project that did not fit into any existing conception of how the USSR had originally planned to explore space. Gone and abandoned were Earth orbital stations and spacecraft to Mars, as engineers risked their nettle on this one endeavour. Unlike Apollo, however, the N-1/L-3 programme was not a national priority until 1967. A follow up decree on 4 February 1967 was meant to underscore the importance of the N-1/L-3 project as a fundamental goal of Soviet science. But by then, it was too little too late. It had already been nearly six years since Apollo had received its go-ahead.

The repercussions of the August 1964 decision permeated the Soviet human space programme for over a decade. The L-3 lunar landing pro-



gramme was eventually abandoned in the early 1970s as the OKB-1 began redirecting its efforts to Earth orbital stations. Despite four consecutive launch failures, intensive work on the N-1 continued until 1974 at which time the programme was frozen under orders from Korolev's old nemesis Glushko. Having gobbled up approximately 4 billion roubles over 13 years, it was the most expensive civilian space programme in the USSR at the time [18]. After years of gross mismanagement by Soviet administrators such as Brezhnev, Ustinov, and Smirnov, when it came time to hide the wreckage of 13 years, it was done without much remorse. In a sense it was the completing of a cycle. Having endured an excruciatingly painful birth in 1964, the Soviet lunar landing programme was abruptly put to sleep at the very moment when it finally began to come into its own. Thus was the legacy of August 1964.

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# USAF Commemorates 40th Anniversary of Explorer 1 Launch



Major General Gerald Perryman, Commander of the US 14th Air Force, addresses guests at the US Air Force ceremony at Launch Complex 26 to commemorate the 40th anniversary of the launch of Explorer 1 from Cape Canaveral. R.G. GUILLEMETTE, FBIS

At 10:48 pm local time, on 31 January 1958, the United States entered the Space Age when a Juno 1 rocket lifted off from Launch Complex 26 at Cape Canaveral carrying the Explorer 1 satellite into orbit around the Earth.

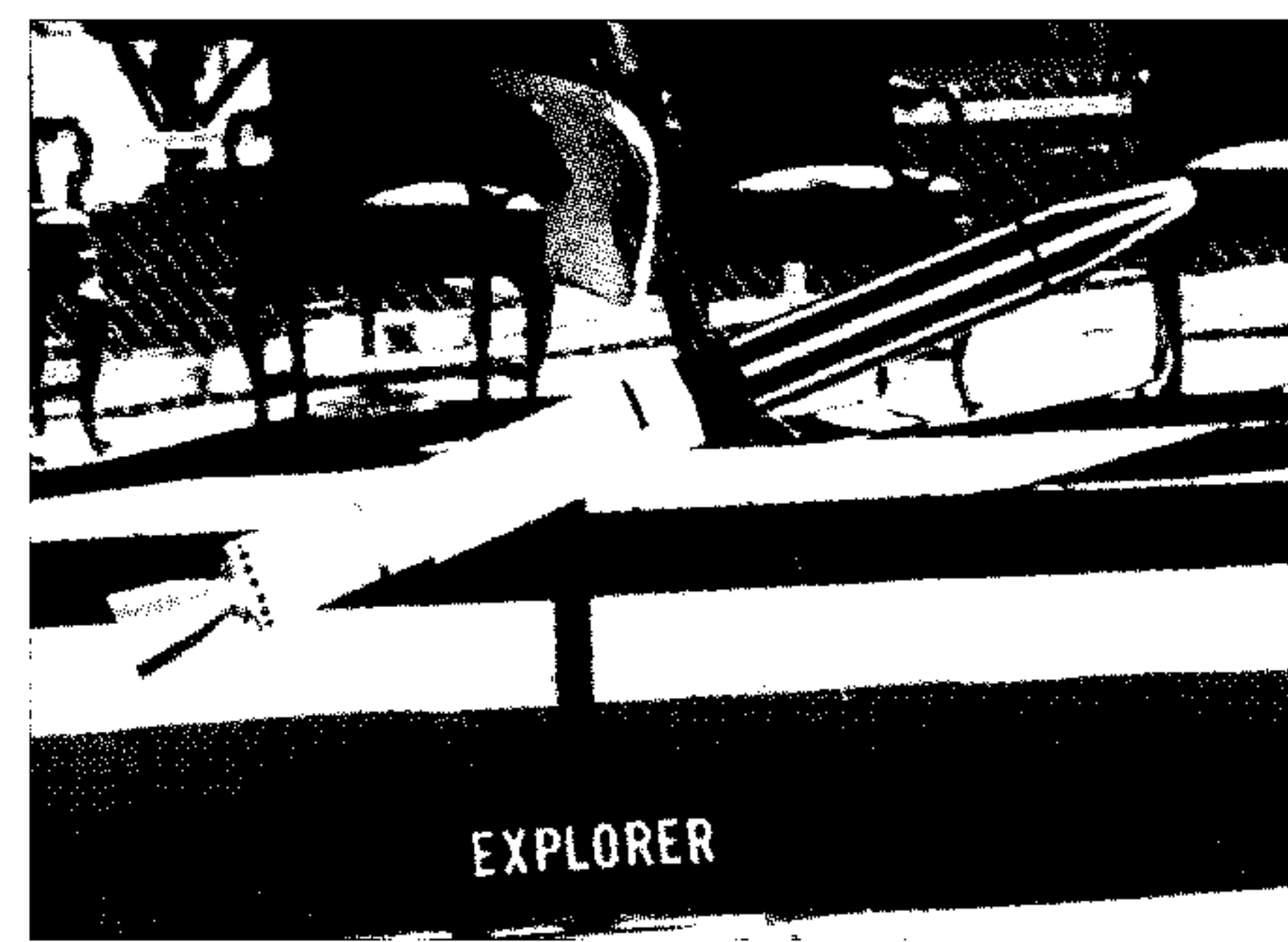
TWO HOURS after the launch, the understated declaration - "Goldstone has the bird" - confirmed that the Goldstone Tracking Station in Earthquake Valley, California had received a radio signal from the 14 kg scientific satellite, indicating that it had achieved orbit.

Minutes later, President Dwight D. Eisenhower addressed the American public via radio to announce the historic event:

"The United States has successfully placed a scientific satellite in orbit around the Earth. This is part of our participation in the International Geophysical Year."

Forty years to the day after that landmark event, the United States Air Force commemorated the first American satellite launch with a 'Space Fair' and ceremonies at the Explorer 1 launch site - Launch Complex 26 of Cape Canaveral Air Station, now part of the Air Force Space Museum.

A number of dignitaries addressed the gathering, which included some members of the original Explorer 1 launch team. The Commander of the 45th Space Wing (which operates Cape Canaveral Air Station), Brigadier General F. Randall Starbuck, USAF, saluted the space pioneers and stressed the importance of the Ex-



A scale model of the Explorer 1 spacecraft displayed in front of the speaker's podium. R.G. GUILLEMETTE, FBIS

plorer 1 launch:

"In 1958, it was Explorer I. Today, we have Cassini on its way to Saturn and Lunar Prospector rediscovering the Moon. It is important to realise that commercial and military developments of space are vital to our economy and national security."

Mr Michael Baker, Command Historian of the US Army Aviation and Missile Command, took delight in reminding the gathering that it was a US Army team, headed by Dr Wernher von Braun and General J.B. Medaris - and not the US Air Force - that launched the first American satellite:

"Explorer 1 was the catalyst. It was the point from which everything else took off. And, it was the Army that let us do it."

After completing its scientific programme, which included the discovery of the Van Allen Radiation Belt, Explorer 1 continued to orbit the Earth more than 58,000 times, finally burning up over the Pacific Ocean in 1970.

ROGER G. GUILLEMETTE, FBIS