days in orbit. From this, I feel it is safe to assume that a successful Soyuz 1 flight would have lasted two days.

After Soyuz 1, two missions involving the automatic rendezvous and docking of unmanned Soyuz vehicles were successfully completed, Cosmos 186/188 in October 1967 and Cosmos 212/213 in April 1968. Only then was a docking mission involving a lone manned Soyuz, Soyuz 3 - piloted by Beregovoi, and an unmanned Soyuz, Soyuz 2, attempted in October 1968. Efforts to link the two vehicles proved unsuccessful. The Soviets later claimed that docking was not essential to the mission! The Soyuz 4/5 flight in January 1969 finally fulfilled the long-standing prophecy of Soviet plans to dock two manned Soyuz spacecraft. This series of events would seem an incredibly cautious reaction to the Soyuz 1 tragedy if a Soyuz 4/5 profile had indeed been originally envisioned for the first manned Soyuz mission. I am inclined to believe that the Soyuz 4/5 profile was to be flown in late 1967, after a successful Soyuz 1 flight and at least one more (probably two) automatic docking of dual unmanned Soyuz vehicles. The following table illustrates possible crew assignments for a Soyuz 2/3 mission.

Soyuz	*Prime*	*Backup*
1	Komarov	Gagarin
2	Gagarin	Beregovoi
3	Bykovsky	Shatalov
	Yeliseyev	Kubasov
	Khrunov	Gorbatko

I also have a difficult time conceiving of the Soviets embarking on what, in 1967, would have been a rather ambitious Soyuz 1/2 profile so shortly after the unexpected death of Chief Designer Sergei Korolev. While it is certain that Korolev's subordinates were capable of continuing in his stead, his loss must have just as certainly disrupted the course of the Soviet space programme. In addition, a Soyuz 1/2 mission has the flavour of a Khrushchev era "space spectacular," which the Brezhnev regime did not look upon too favourably.

The argument supporting a Soyuz 1/2 profile is grounded on rumours and a few photographs - not the most solid of evidence. It fails to recognize practices the Soviets have maintained since the inception of their manned space programme and ignores the implications of flights subsequent to Soyuz 1. Of course, any conclusion rendered on the basis of the scant information presently available on the flight of Soyuz 1 remains open to criticism until the facts are known. For now, those within the Soviet space programme know the true story of Soyuz 1.

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REFERENCES

1. James Oberg, "Soyuz 1 Ten Years After: New Conclusions", *Spaceflight*, May 1977, pp. 183-189.
2. James Oberg, "The Hidden History of the Soyuz Project", *Spaceflight*, Aug.-Sept. 1975, p. 284.
3. Nicholas L. Johnson, "A Classification of Soyuz Variants", *Spaceflight*, March 1979, p. 102.

Histories and Launch Logs

Sir, I note that Anthony Kenden in the July 1978 issue of *Spaceflight* lists a Titan 3B/Agena D launch failure on 5 June 1974, one day before the successful launch of 1974-42A. I have seen this launch failure listed in *TRW Space Log*, but not anywhere else and I would have thought that it must be a mistaken reporting of the successful launch the following day, since there is only one Titan 3B launch pad - SLC 4a. Otherwise, the new launch vehicle would have had to be set up on the pad from scratch in one day, which seems unlikely.

Finally, may I say that I think the articles by Andrew Wilson giving histories and launch logs of various rockets are a very good idea and a useful reference. I think it would be a good idea to eventually print entire launch histories* of the Atlas and Thor vehicles.

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** Mr. McDowell will be pleased to learn that this task is already under way. Ed.*

First Soviet Civilian Space Commander

Sir, In Table 2 of the article by Nicholas L. Johnson, "The Military and Civilian Salyut Space Programme" in the August-September issue of *Spaceflight*, the author writes that the commander of Soyuz 33, Rukavishnikov, is military. This is not so. Rukavishnikov is a civilian; see also in the same table Soyuz 10. So he is the first *civilian* commander of a Soviet spaceship.

Another civilian commander will be Kubasov. He was back-up commander of Soyuz 30. He will be prime commander of a following Intercosmos flight.

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PROGRAMMING THE SHUTTLE TO FUTURE NEEDS

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After this article was written NASA decided to request an additional $300 million for the current FY1980 period in addition to the supplemental approved earlier last year for Shuttle R&D. This means a 93 per cent increase over the original plan rather than the 34.4 per cent described in the article. Also, the Office of Management and Budget has rejected the request for support of the Halley/Tempel 2 mission as part of the FY1981 budget. Ed.

THE BIRTH OF THE MECHANICAL SPACEMAN

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and each of its eight rocket engines has a minimum of 164.65 newtons of thrust.

The TRS communications and data management hardware in the Orbiter are located on the aft flight deck. Special hand controls, a TV monitor and other controls and displays, are required so that a crew member can remotely control or monitor the teleoperator through all phases of the mission.

The command station aboard the Orbiter will be used for transmitting commands to the TRS, receiving and processing telemetry from the TRS and to receive TV pictures from the TRS.

Since the abandonment of the Skylab revisit mission the overall TRS Programme plans and the basic TRS configuration have been re-evaluated. Over the next two years the actual configuration performance capabilities will be further evaluated. The hope of the space agency is to make TRS available for payload placement and retrieval missions by 1984.