Novosibirsk Dirigible-Building Public Design Bureau (OKB)

Peter Lobner, 11 February 2022

1. Introduction

In the early 1960s, several “Voluntary Design Bureaus” were formed in the Soviet Union to promote the development of dirigibles as a means for solving important national economic problems in cargo transportation, agriculture and research, and for filling an industrial void that had existed since before WW II. The first such bureau appears to have been the Leningrad Volunteer Design Bureau of Dirigible Construction, which was formed in 1961. Others design bureaus were established during the early 1960s in Kiev, Novosibirsk and the Urals.

The Novosibirsk Dirigible-Building Public Design Bureau (OKB) was founded in the early 1960 under the leadership of V.A. Novikov, with V. Zlobin serving as the Chief Engineer.

Siberian Branch of the Academy of Sciences of the USSR organized the first All-Union Conference of Enthusiasts of Dirigible Building in Novosibirsk, Siberia. In the spring of 1965, the First All-Union Conference of Enthusiasts of Dirigible Building was called "at the initiative of the public and a number of Novosibirsk organization. Many expressed their support for the revival of dirigible construction and were then actively promoting it.

The OKB developed processes for manufacturing all-metal airships made from sheets of metal cladding that were welded together by the “strip explosion method” (today called explosion welding).

The following sections provides limited information on three airship designs from the Novosibirsk Dirigible-Building Public Design Bureau. It appears that none of these airships were built.

2. Natural gas carrier airship

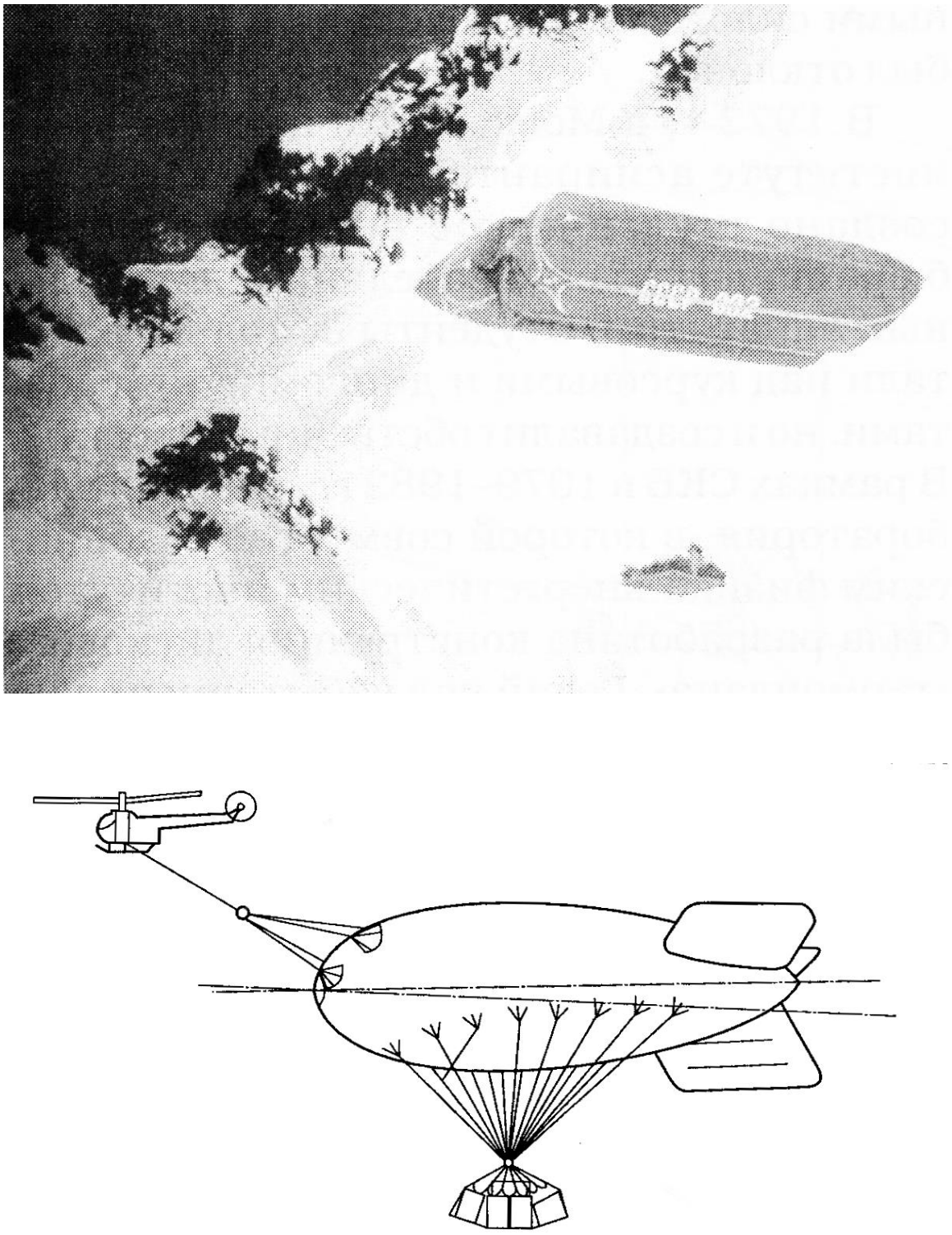
Russian aeronautical engineer and author Michael Arie described the Novosibirsk Design Bureau's gas carrier airship as follows (Arie, 1983 & 1986):

> "The original design of the gas carrier airship was carried out at the Novosibirsk Public Design Bureau. The ship is designed to transport large quantities of natural gas. Its length is about 150 m (492 ft), the maximum diameter is about 50 m (164 ft). The envelope consists of ….. a set of longitudinally bent, large diameter pneumatic beams located along the periphery of the circle and connected at the ends with the bow and stern gas cylinders. The pneumatic beams and cylinders contain helium under increased pressure, which ensures that the shape of the shell is maintained….. Almost all the rest of the inner space of the shell is filled with natural gas. Balancing the excess lifting force of natural gas is carried out using ballast, which can be liquid fuel (oil, methanol, etc.)…..The dirigible's engines will run on the transported gas. Such a ship will be able to take on board about 100,000 m^3 (3,531,000 ft^3) of natural gas.
>
> The project implements the idea of K.E. Tsiolkovsky about the use of carrier gas as fuel for propulsion engines. In this case, it is transported natural gas."

The gas carrier airship was not built.

2. Aero barge

The OKB developed a concept for an unpowered "aero barge" with a large envelope that could lift a heavy sling load and be pulled along to its destination by a helicopter or a vehicle on the ground. The gas envelope could be deflated, rolled up and stored when not in use.



Two Novosibirsk OKB aero barge concepts.
Source: Boyko (2001)

3. Other airship designs

Jane's (1977) reported that two other airship designs were developed by the Novosibirsk Design Bureau by 1965. Neither was built.

- Novosibirsk 1 non-rigid airship:
  - Length: 55.0 m (180.4 ft)
  - Diameter: 12.0 m 39.4 ft)
  - Envelope volume: 6,000 m^3 (211,888 ft^3)
  - Engines: 1 or 2

- Novosibirsk 2 semi-rigid airship:
  - Length: 154.0 m (505.3 ft)
  - Diameter: 36.0 m (118.1 ft)
  - Envelope volume: 70,000 m^3 (2,472,026 ft^3)
  - Engines: 2
  - Speed, max: 220 kph (137 mph)

4. For more information

- Heather Campbell, "Controversy in Soviet R&D: The Airship Case Study," Report-1001-PR, Rand Corp., October 1972: https://apps.dtic.mil/sti/pdfs/ADA596129.pdf
- Lord Ventry & E.M. Kolesnik, "Jane's Pocket Book of Airships," Collier Books, ISBN-13 978-0020803300, 1977
- M. Ya. Arie & A.G. Polnker, "Dirigibles of a New Generation," Publishing House "Naukova Dumka", Kiev, Ukraine, 1983
- M. Ya. Arie, "Dirigibles," Publishing House "Naukova Dumka", Kiev, Ukraine, 1986
- Yu.S. Boyko, "Aeronautics: Tethered, Free, Managed," ISBN 5.8122-0233-8, Publishing house MGUP, Moscow, Russia, 2001
- Alastair Reid, "Russian Airships – An Illustrated History in English," 2016, self-published and available thru Lulu: https://www.lulu.com/it/it/shop/alastair-reid/russian-airships/paperback/product-1km4n9zw.html?page=1&pageSize=4

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