

Top Secret

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basic imagery interpretation report

Activity and Developments at Selected Soviet Space Research Institutes (S)

STRATEGIC WEAPONS INDUSTRIAL FACILITIES
BE: Various
USSR

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INSTALLATION OR ACTIVITY NAME					COUNTRY
Activity and Developments at Selected Soviet Space Research Institutes					UR
UTM COORDINATES	GEOGRAPHIC COORDINATES	CATEGORY	BE NO.	COMIREX NO.	NIETB NO.
NA	See below	See below	See below	See below	See below
MAP REFERENCE					
ACIC, USATC, Series 200, Sheet 0167-5, scale 1:200,000					
LATEST IMAGERY USED			NEGATION DATE (if required)		
See "Abstract"			NA		

Installation Name	Geographic Coordinates	Category	BE No	COMIREX No	NIETB (MRN No)
Shchelkovo Cosmonaut Training Facility	55-52-33N 038-06-54E	[redacted]			
Moskva Space Research Facility Tomilino	55-34-52N 037-56-31E				
Moskva Scientific Research Institute NII Bolshevo 4	55-56-28N 037-50-55E				
Moskva Scientific Research Institute NII-1	55-50-50N 037-31-32E				
Moskva Institute for Space Research IKI	55-39-00N 037-31-42E				
Moskva Institute of Chemical Physics Academy of Science	55-42-31N 037-34-42E				

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ABSTRACT

1. (TSR) This report describes recent developments at six Soviet space-related research institutes. Construction at Shchelkovo Cosmonaut Training Facility, Moskva Space Research Facility Tomilino, Moskva Scientific Research Institute NII Bolshevo 4, and Moskva Scientific Research Institute NII-1 indicated that the Soviets are increasing their capabilities in basic research which has direct application to their space program. A new, probable neutral buoyancy test/training facility at Shchelkovo will enhance the capability of this installation to support training and research for the Soviet's manned space flight program. Moskva Institute for Space Research IKI directs much of the research and development of the Soviet's unmanned space flight programs. The Moskva Institute of Chemical Physics Academy of Science emphasizes advanced, theoretical research into propellants which will have a direct impact on future space launch vehicle and missile propulsion systems.

2. (TSR) This report is based on all applicable KEYHOLE imagery and updates previous NPIC reports on three of these six facilities—[redacted] on Tomilino, [redacted] on Bolshevo 4, and [redacted] on NII-1. This is the first basic report describing Shchelkovo Cosmonaut Training Facility, Moskva Institute for Space Research IKI, and Moskva Institute of Chemical Physics Academy of Science. The information cutoff date for this report is [redacted]

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3. (U) This report includes a location map, six annotated photographs, and six tables providing mensural and chronological data.

INTRODUCTION

4. (TSR) The six installations (Figure 1) discussed in this report are involved in basic and applied research in support of the Soviet space program. Because much of this research was carried out in a laboratory environment, collateral sources were relied upon to identify the mission or programs of a particular institute. The large amount of new floorspace added to these installations during the reporting period indicated that the Soviets are expanding their research support for the space program.

5. (TSR) The current reporting period for three of the six institutes covered by this report was dependent upon the date of the latest imagery used in the previous NPIC reports¹⁻³ for each installation. All applicable KEYHOLE imagery acquired between the earliest date of [redacted] was used in the preparation of this report. This is the first basic report on Shchelkovo Cosmonaut Training Facility, Moskva

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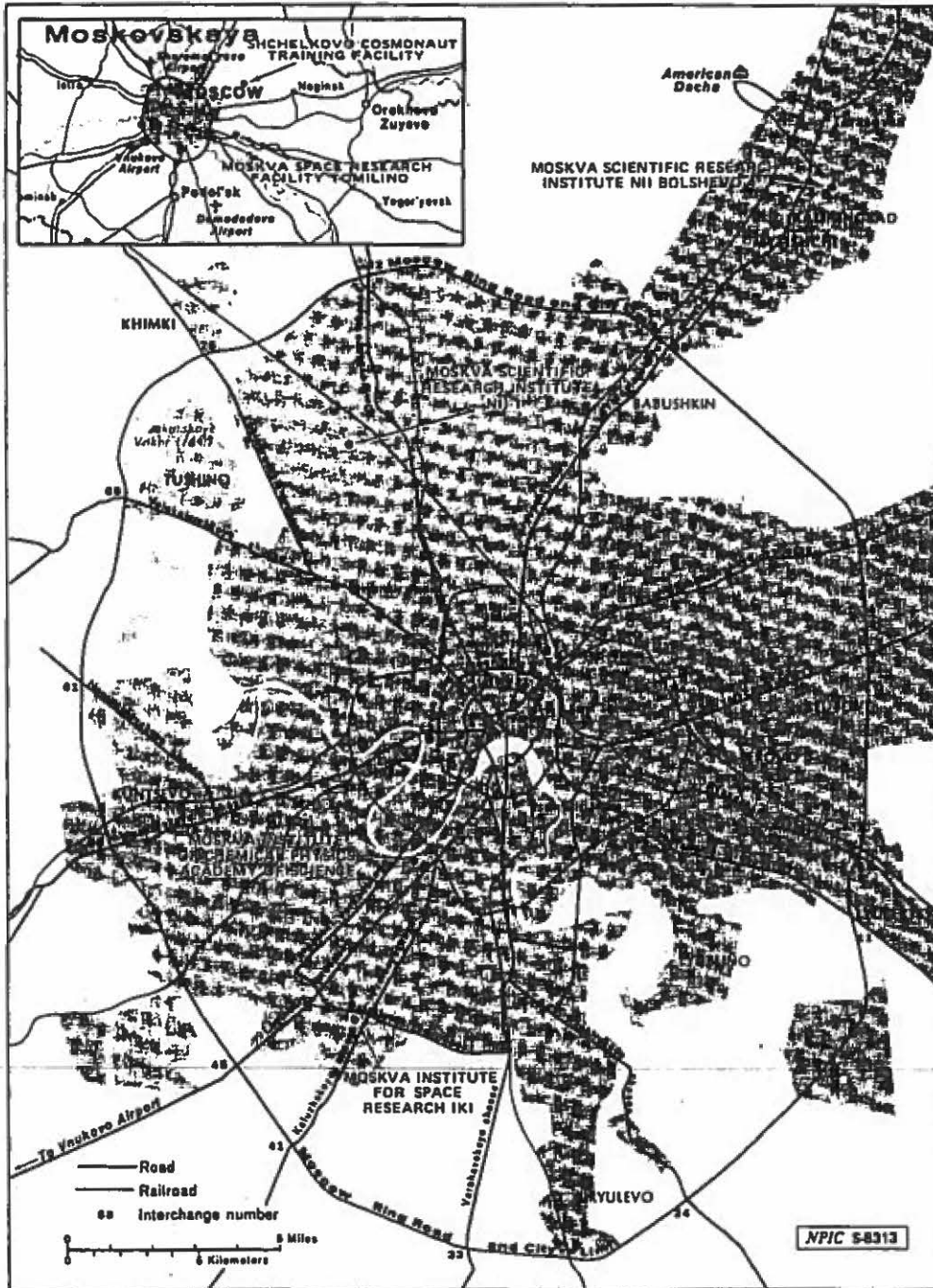


FIGURE 1. LOCATIONS OF SELECTED SOVIET SPACE RESEARCH INSTITUTES

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Institute for Space Research IKI, and Moskva Institute of Chemical Physics Academy of Science. The reporting period was determined by the date that the installations were first identified. The specific reporting dates for each installation are listed below.

Installation	Reporting Period
Shchelkovo	[redacted]
Tomilino	
Bolshevo 4	
NII-1	
IKI	
Chemical Physics	

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Shchelkovo Cosmonaut Training Facility

6. (TSR) The Shchelkovo Cosmonaut Training Facility is 18 nautical miles (nm) northeast of the Kremlin, adjacent to the Moscow/Shchelkovo Airfield [redacted] Shchelkovo is the primary training facility for Soviet cosmonauts and consists of a housing and support area and a training and research area. Shchelkovo, also known as the Star City, is one of the most open facilities in the Soviet Union and has been visited by US astronauts, space scientists, and newspaper and magazine correspondents.

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7. (TSR) The cosmonauts and their families live on site. The housing and support area contains 11 apartment buildings, two of which (items 16 and 25, Figure 2 and Table 1) were still under construction; a kindergarten/nursery (item 19); an intermediate school (item 7); and recreation, entertainment, and commercial centers (items 4, 8, and 23) for use by cosmonauts, support personnel, and their families. This area also contains a reception/administration building (item 1) and a probable visitors quarters (item 32). The probable visitors quarters was one of a complex of buildings observed under construction in mid-1973 by a correspondent for a US magazine. At that time the quarters was reported to be a "hotel and dormitory complex, on the shore of a new man-made lake, for US astronauts, technicians and officials" in support of the joint US-Soviet, Apollo-Soyuz Test Program.⁷ The completed floorspace of the housing and support area as of [redacted] was 109,389 square meters with another 9,702 square meters under construction.

8. [redacted] The training and research area contains training equipment and facilities for general space flight orientation, training for a specific mission, as well as physical conditioning. Facilities available in the training and research area include two centrifuges (items 69 and 73d), a Soyuz simulator (item 70), a probable Salyut simulator (item 81), and a probable neutral buoyancy test/training facility (item 75).⁴⁻⁶ Physical conditioning and athletic facilities are in the southeast corner of the training and research area and include a soccer field encircled by a track, tennis courts, outdoor basketball courts, and a probable gymnasium (item 63). A skeet range is in the north-central portion of the training and research area. The training and research area contains 61,806 square meters of floorspace with an additional 1,970 square meters under construction.

9. [redacted] As the Soviet's manned space flight programs have become more complex, the preflight training for these programs has be-

come more sophisticated. Prior to the first manned Soyuz mission in 1967, cosmonaut training was rather simple and emphasized physical conditioning. Yuri Gagarin, the first cosmonaut, received less than a month's training in a centrifuge and had very little simulated training before the flight.⁴ This training probably took place at Shchelkovo. As the manned space flight program continued, new and better equipment was added. The large centrifuge section (item 73d) constructed between October 1972 and April 1975 greatly advanced the Soviet capabilities in this type of training. The probable Salyut simulator (item 81) was also a major improvement, and the construction of the probable neutral buoyancy test/training facility added a simulation technique not used before at Shchelkovo.

10. (TSR) Two new foundations which have been observed recently in the training and research area are probably intended to be used as training facilities for future manned space flight missions. One foundation (item 83) is a circular excavation with an outer diameter of [redacted] and an inner diameter of [redacted]. Four rectangular excavations extend from the circular foundation and are set at 90 degrees from one another; each of these are approximately [redacted]. The second new foundation (item 84) is [redacted]. No specific function has been associated with this new construction.

Moskva Space Research Facility Tomilino

11. [redacted] Moskva Space Research Facility Tomilino is in the suburb of Tomilino, approximately 12 nm southeast of Moscow. The Tomilino facility is responsible for research, development, and testing of life-support and safety equipment for flight personnel and cosmonauts, including space suits, antigravity suits, and ejection seats.⁷ The facility has also been involved in experiments investigating the physiological and psychological effects of space conditions on human beings. The principal facilities available to support this work at Tomilino include a centrifuge and a man-rated vacuum chamber installed during 1962 and 1963 which has a reported altitude simulation capability of 100 kilometers.⁹

12. (TSR) Between [redacted] a total of 8,117 square meters of floorspace was added to Tomilino (Figure 3 and Table 2). A storage shed was razed during this period, and a shop building (item 1), constructed in the east end of the facility, replaced an administration building. Research/laboratory space accounted

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Table 1.
Buildings and Structures of Bhelele-Cameroon Fishing Facility
(Shown by Figure 2)

Item	Structure	Dimensions (ft x ft)	Volume (cu ft)	Floor Area (sq ft)	Comments	Item	Structure	Dimensions (ft x ft)	Volume (cu ft)	Floor Area (sq ft)	Comments	Item	Structure	Dimensions (ft x ft)	Volume (cu ft)	Floor Area (sq ft)	Comments
1	Storage shed	10 x 10	1,000	100	1 room	16	Storage shed	10 x 10	1,000	100	1 room	16	Storage shed	10 x 10	1,000	100	1 room
2	Storage shed	10 x 10	1,000	100	1 room	17	Storage shed	10 x 10	1,000	100	1 room	18	Storage shed	10 x 10	1,000	100	1 room
3	Storage shed	10 x 10	1,000	100	1 room	19	Storage shed	10 x 10	1,000	100	1 room	20	Storage shed	10 x 10	1,000	100	1 room
4	Storage shed	10 x 10	1,000	100	1 room	21	Storage shed	10 x 10	1,000	100	1 room	22	Storage shed	10 x 10	1,000	100	1 room
5	Storage shed	10 x 10	1,000	100	1 room	23	Storage shed	10 x 10	1,000	100	1 room	24	Storage shed	10 x 10	1,000	100	1 room
6	Storage shed	10 x 10	1,000	100	1 room	25	Storage shed	10 x 10	1,000	100	1 room	26	Storage shed	10 x 10	1,000	100	1 room
7	Storage shed	10 x 10	1,000	100	1 room	27	Storage shed	10 x 10	1,000	100	1 room	28	Storage shed	10 x 10	1,000	100	1 room
8	Storage shed	10 x 10	1,000	100	1 room	29	Storage shed	10 x 10	1,000	100	1 room	30	Storage shed	10 x 10	1,000	100	1 room
9	Storage shed	10 x 10	1,000	100	1 room	31	Storage shed	10 x 10	1,000	100	1 room	32	Storage shed	10 x 10	1,000	100	1 room
10	Storage shed	10 x 10	1,000	100	1 room	33	Storage shed	10 x 10	1,000	100	1 room	34	Storage shed	10 x 10	1,000	100	1 room
11	Storage shed	10 x 10	1,000	100	1 room	35	Storage shed	10 x 10	1,000	100	1 room	36	Storage shed	10 x 10	1,000	100	1 room
12	Storage shed	10 x 10	1,000	100	1 room	37	Storage shed	10 x 10	1,000	100	1 room	38	Storage shed	10 x 10	1,000	100	1 room
13	Storage shed	10 x 10	1,000	100	1 room	39	Storage shed	10 x 10	1,000	100	1 room	40	Storage shed	10 x 10	1,000	100	1 room
14	Storage shed	10 x 10	1,000	100	1 room	41	Storage shed	10 x 10	1,000	100	1 room	42	Storage shed	10 x 10	1,000	100	1 room
15	Storage shed	10 x 10	1,000	100	1 room	43	Storage shed	10 x 10	1,000	100	1 room	44	Storage shed	10 x 10	1,000	100	1 room
16	Storage shed	10 x 10	1,000	100	1 room	45	Storage shed	10 x 10	1,000	100	1 room	46	Storage shed	10 x 10	1,000	100	1 room
17	Storage shed	10 x 10	1,000	100	1 room	47	Storage shed	10 x 10	1,000	100	1 room	48	Storage shed	10 x 10	1,000	100	1 room
18	Storage shed	10 x 10	1,000	100	1 room	49	Storage shed	10 x 10	1,000	100	1 room	50	Storage shed	10 x 10	1,000	100	1 room
19	Storage shed	10 x 10	1,000	100	1 room	51	Storage shed	10 x 10	1,000	100	1 room	52	Storage shed	10 x 10	1,000	100	1 room
20	Storage shed	10 x 10	1,000	100	1 room	53	Storage shed	10 x 10	1,000	100	1 room	54	Storage shed	10 x 10	1,000	100	1 room
21	Storage shed	10 x 10	1,000	100	1 room	55	Storage shed	10 x 10	1,000	100	1 room	56	Storage shed	10 x 10	1,000	100	1 room
22	Storage shed	10 x 10	1,000	100	1 room	57	Storage shed	10 x 10	1,000	100	1 room	58	Storage shed	10 x 10	1,000	100	1 room
23	Storage shed	10 x 10	1,000	100	1 room	59	Storage shed	10 x 10	1,000	100	1 room	60	Storage shed	10 x 10	1,000	100	1 room
24	Storage shed	10 x 10	1,000	100	1 room	61	Storage shed	10 x 10	1,000	100	1 room	62	Storage shed	10 x 10	1,000	100	1 room
25	Storage shed	10 x 10	1,000	100	1 room	63	Storage shed	10 x 10	1,000	100	1 room	64	Storage shed	10 x 10	1,000	100	1 room
26	Storage shed	10 x 10	1,000	100	1 room	65	Storage shed	10 x 10	1,000	100	1 room	66	Storage shed	10 x 10	1,000	100	1 room
27	Storage shed	10 x 10	1,000	100	1 room	67	Storage shed	10 x 10	1,000	100	1 room	68	Storage shed	10 x 10	1,000	100	1 room
28	Storage shed	10 x 10	1,000	100	1 room	69	Storage shed	10 x 10	1,000	100	1 room	70	Storage shed	10 x 10	1,000	100	1 room
29	Storage shed	10 x 10	1,000	100	1 room	71	Storage shed	10 x 10	1,000	100	1 room	72	Storage shed	10 x 10	1,000	100	1 room
30	Storage shed	10 x 10	1,000	100	1 room	73	Storage shed	10 x 10	1,000	100	1 room	74	Storage shed	10 x 10	1,000	100	1 room
31	Storage shed	10 x 10	1,000	100	1 room	75	Storage shed	10 x 10	1,000	100	1 room	76	Storage shed	10 x 10	1,000	100	1 room
32	Storage shed	10 x 10	1,000	100	1 room	77	Storage shed	10 x 10	1,000	100	1 room	78	Storage shed	10 x 10	1,000	100	1 room
33	Storage shed	10 x 10	1,000	100	1 room	79	Storage shed	10 x 10	1,000	100	1 room	80	Storage shed	10 x 10	1,000	100	1 room
34	Storage shed	10 x 10	1,000	100	1 room	81	Storage shed	10 x 10	1,000	100	1 room	82	Storage shed	10 x 10	1,000	100	1 room
35	Storage shed	10 x 10	1,000	100	1 room	83	Storage shed	10 x 10	1,000	100	1 room	84	Storage shed	10 x 10	1,000	100	1 room
36	Storage shed	10 x 10	1,000	100	1 room	85	Storage shed	10 x 10	1,000	100	1 room	86	Storage shed	10 x 10	1,000	100	1 room
37	Storage shed	10 x 10	1,000	100	1 room	87	Storage shed	10 x 10	1,000	100	1 room	88	Storage shed	10 x 10	1,000	100	1 room
38	Storage shed	10 x 10	1,000	100	1 room	89	Storage shed	10 x 10	1,000	100	1 room	90	Storage shed	10 x 10	1,000	100	1 room
39	Storage shed	10 x 10	1,000	100	1 room	91	Storage shed	10 x 10	1,000	100	1 room	92	Storage shed	10 x 10	1,000	100	1 room
40	Storage shed	10 x 10	1,000	100	1 room	93	Storage shed	10 x 10	1,000	100	1 room	94	Storage shed	10 x 10	1,000	100	1 room
41	Storage shed	10 x 10	1,000	100	1 room	95	Storage shed	10 x 10	1,000	100	1 room	96	Storage shed	10 x 10	1,000	100	1 room
42	Storage shed	10 x 10	1,000	100	1 room	97	Storage shed	10 x 10	1,000	100	1 room	98	Storage shed	10 x 10	1,000	100	1 room
43	Storage shed	10 x 10	1,000	100	1 room	99	Storage shed	10 x 10	1,000	100	1 room	100	Storage shed	10 x 10	1,000	100	1 room

*Dimensions in parentheses are not indicated in field notes.

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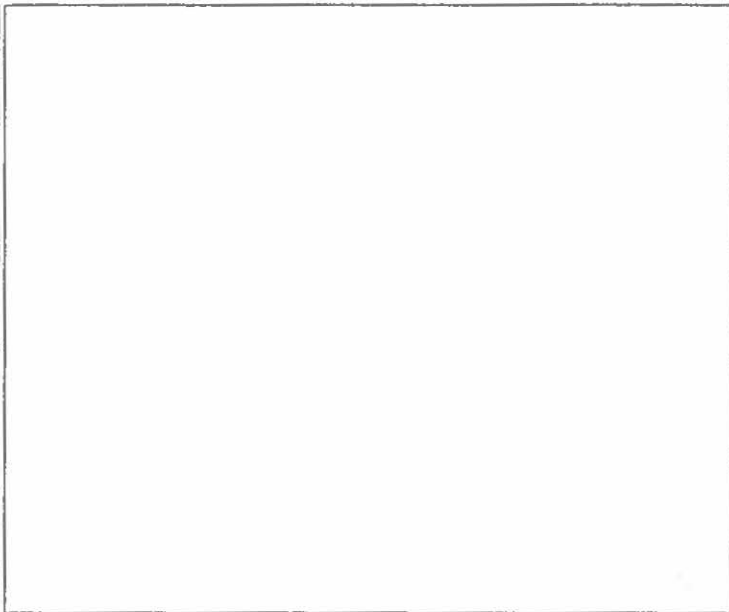
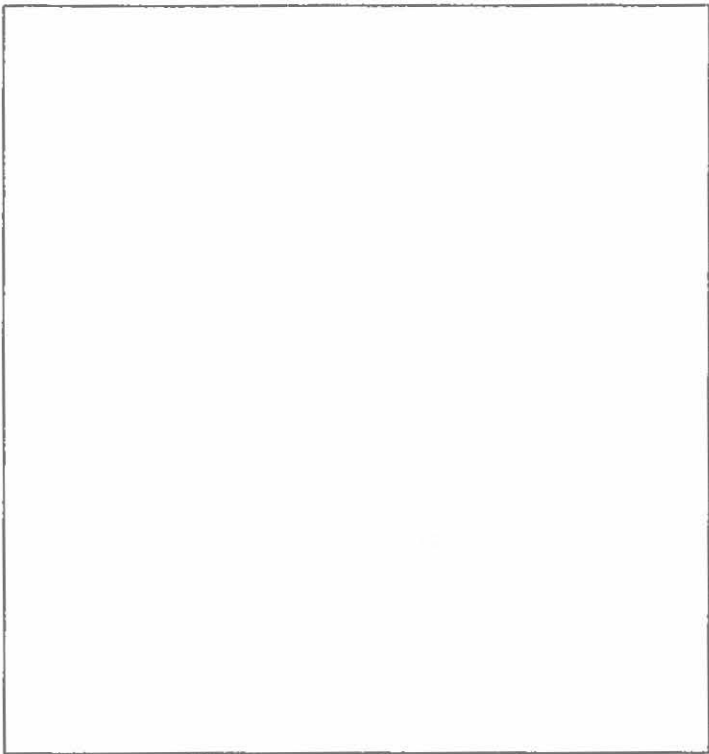


Table 4.
Construction of Moscow Scientific Research Institute NII-1

(Items keyed to Figure 5)
The table in its entirety is classified TOP SECRET RUFF

Item	Function	Dimensions (m)		Floorspace* (sq m)	Start	First Done	Complete	Comments
		L	W					
1	Research/lab bldg	—	—	3,620	Jul 76	Aug 78		
a	Lab sect	49	16	91 (1,744)				Irreg, overall dimens given; 2 stories
b	Lab sect	49	13	19 (1,374)				Irreg, overall dimens given; 2 stories
2	Support sect	49	4	11 (548)				2 stories
3	Storage bldg	31	6	7 (208)	—	Feb 78		Complete when first observed
4	Storage bldg	12	0	3 (9)	—	Jul 76		Complete when first observed
5	Storage bldg	17	6	6 (102)	—	Jul 76		Complete when first observed
6	Storage bldg	12	6	4 (72)	—	Jul 76		Complete when first observed
6	Prob prepublish handling bldg	—	—	—	Apr 77	Jun 78		
a	Support sect	9	0	3 (54)				2 stories
b	Operations sect	18	9	7 (270)				
c	Support sect	9	0	3 (54)				
7	Test cell addition	29	12	11 (316)	Nov 76	Jul 77		Irreg; overall dimens given
Total floorspace added				4,216				
Less floorspace reused				3,864				
Net floorspace added				1,352				

*Numbers in parentheses are not included in total floorspace

Table 5.
Buildings and Structures at Moscow Institute For Space Research IKI
(Items keyed to Figure 6)

The table in its entirety is classified TOP SECRET RUFF

Item	Function	Dimensions (m)		Floorspace* (sq m)	Comments
		L	W		
1	Research/operations bldg	403	19	53 (116,264)	16 stories
2	Prob computer bldg	21	21	11 (441)	
3	Prob computer bldg	21	21	11 (441)	
4	Prob computer bldg	21	21	11 (441)	
5	Prob computer bldg	21	21	11 (441)	
6	Support bldg	10	6	4 (60)	
7	Support bldg	13	3	3 (40)	
8	Support bldg	10	4	4 (40)	
9	Support bldg	32	13	4 (376)	Irreg; overall dimens given
10	Storage bldg	4	4	3 (16)	
11	Shop bldg	54	19	11 (1,139)	Southeast half of bldg is 2 stories
12	Storage bldg	20	7	3 (140)	Southeast half of bldg is 2 stories
13	Storage bldg	42	9	4 (368)	Irreg; overall dimens given
14	Prob research bldg	53	55	11 (3,013)	
15	Utility bldg	55	55	11 (3,013)	
16	Storage bldg	46	13	3 (298)	
17	Cooling towers	—	—	—	No floorspace given
18	Storage bldg	14	6	5 (84)	
19	Storage bldg	31	13	7 (403)	
20	Storage bldg	30	13	6 (390)	
21	Support bldg	13	10	8 (130)	
22	Prob research bldg	—	—	—	3,172
a	Shop sect	54	20	10 (1,080)	
b	Lab sect	54	20	10 (1,080)	
c	Support sect	54	18	10 (972)	
Total floorspace					131,177

*Numbers in parentheses are not included in total floorspace



stor US microwave communications and radars. IKI is also reported to have been involved in a classified program to install infrared detectors on Soviet military satellites.⁹

Moskva Institute of Chemical Physics Academy of Science

24. (TSR) The Moskva Institute of Chemical Physics Academy of Science is on the south bank of the Moskva river in the city of Moscow on both sides of Vorobyevskoye Shosse (street). The 39,335 square meters of floorspace at the institute are contained in 15 buildings (Figure 7 and Table 6). Another 10,213 square meters of floorspace will be added when the research/laboratory building cur-

rently under construction (item 16) is complete.

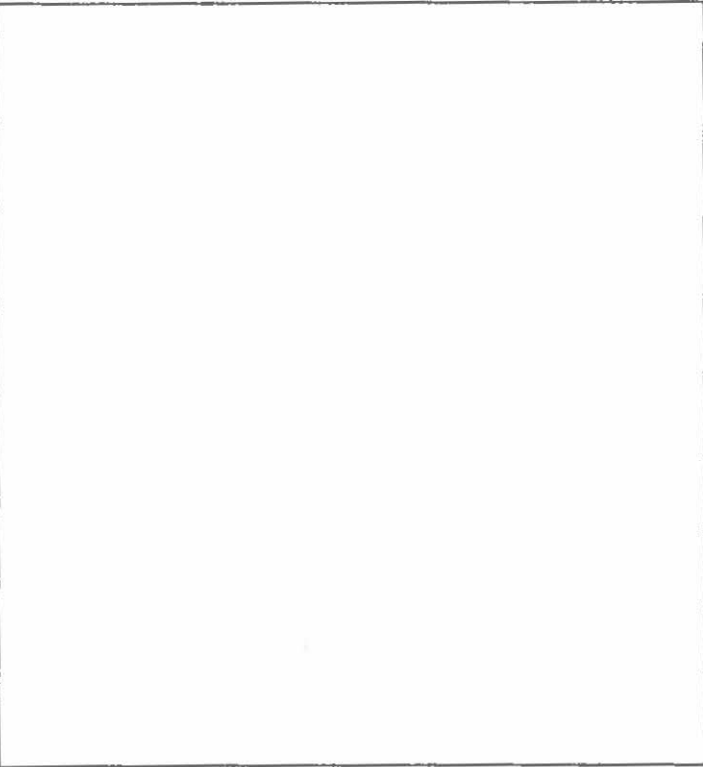
25. [redacted] The Institute of Chemical Physics is reportedly involved in theoretical research into high-energy liquid and solid propellants. Personnel at the institute are involved in combustion studies of perchlorate and nitrate compounds including ammonium and potassium perchlorate, ammonium nitrate, and high-energy additives such as RDX and HMX. Investigations into combustion instability and the synthesis of metallic solid-propellant additives are also being carried out at the institute. These basic research programs will have direct impact on propulsion systems for future space and missile systems.^{10,11}

Table 6.
Buildings and Structures at Moskva Institute of Chemical Physics Academy of Science
(Items keyed to Figure 7)

(This table is unclassified but contains TOP SECRET data)

Item	Function	Dimensions (m)			Floorspace* (sq m)	Comments
		L	W	H		
1	Research/lab bldg	—	—	—	10,728	
a	Research/lab sect	38	18	19	(2,736)	6 stories
b	Research/lab sect	41	18	15	(2,133)	3 stories; irreg overall dimens given
c	Research/lab sect	54	18	15	(2,835)	3 stories; irreg overall dimens given
d	Research/lab sect	28	18	15	(1,512)	3 stories
e	Research/lab sect	30	18	15	(1,512)	3 stories; irreg overall dimens given
2	Research/lab bldg	—	—	—	10,350	
a	Research/lab sect	41	18	19	(2,844)	6 stories; overall dimens given
b	Research/lab sect	81	18	15	(3,699)	3 stories; irreg overall dimens given
c	Research/lab sect	54	18	15	(2,241)	3 stories; irreg overall dimens given
d	Research/lab sect	34	18	15	(1,566)	3 stories; irreg overall dimens given
3	Support bldg	—	—	—	211	
a	Support sect	14	7	4	(98)	
b	Operations sect	14	7	6	(98)	
c	Tower	5	3	8	(151)	
4	Support bldg	—	—	—	397	
a	Loading dock	15	5	4	(75)	
b	Storage sect	23	16	5	(323)	
5	Research/lab bldg	—	—	—	7,806	
a	Research/lab sect	31m diam	24	—	(5,821)	4 stories
b	Research/lab sect	27	8	4	(216)	
c	Support sect	23	11	7	(590)	2 stories
d	Research/lab sect	21	15	19	(943)	3 stories
e	Research/lab sect	30	8	7	(480)	2 stories
f	Research/lab sect	27	11	7	(594)	2 stories
g	Support sect	26	14	8	(728)	2 stories
h	Research/lab sect	28	12	7	(672)	2 stories
6	Storage bldg	—	—	—	419	
a	Storage sect	29	7	4	(203)	
b	Support sect	9	8	4	(72)	
c	Support sect	16	9	4	(144)	
7	Apartment bldg	61	15	14	2,745	3 stories
8	Lab bldg	24	15	8	720	2 stories
9	Lab bldg	24	15	8	720	2 stories
10	Storage bldg	15	11	4	165	
11	Storage bldg	10	8	5	80	
12	Admin/engr bldg	64	12	8	1,536	2 stories
13	Support bldg	—	—	—	714	
a	Support sect	31	18	6	(558)	
b	Support sect	13	12	5	(156)	
14	Research/lab bldg	—	—	—	2,674	
a	Research/lab sect	79	13	7	(1,185)	2 stories
b	Research/lab sect	33	14	11	(462)	3 stories
c	Support sect	27	23	12	(621)	3 stories
d	Research/lab sect	29	14	11	(406)	2 stories
15	Research/lab bldg	18	15	12	270	2 stories
16	Research/lab bldg	—	—	—	(10,213)	Bldg uncn; first observed upon Jun 1973
a	Support sect	diam 6m	6	—	(25)	
b	Research/lab sect	33	16	14	(1,584)	3 stories
c	Support sect	20	16	5	(320)	
d	Research/lab sect	33	16	14	(1,584)	3 stories
e	Support sect	20	16	5	(320)	
f	Research/lab sect	33	16	14	(1,584)	3 stories
g	Support sect	20	16	5	(320)	
h	Admin sect	21	13	23	(1,092)	4 stories
i	Research/lab sect	47	18	22	(3,784)	4 stories
Total floorspace					39,335	

*Numbers in parentheses are not included in total floorspace.



[redacted]

REFERENCES

IMAGERY

(TSR) All relevant KEYHOLE imagery acquired between [redacted] was used in the preparation of this report. The latest date of imagery used for each installation is presented in the Introduction. 25X1 25X1

MAPS OR CHARTS

ACIC. US Air Target Chart, Series 200, Sheet 0167-5, scale 1:200,000 (UNCLASSIFIED)

DOCUMENTS

- 1. NPIC. [redacted] BCA-09/0017/74, *Moskva Space Research Facility Tomilino*, Mar 74 (TOP SECRET) 25X1 25X1
- 2. NPIC. [redacted] RCA-09/0026/71, *Moskva Scientific Research Institute NII Bolsheva 4*, Jan 71 (TOP SECRET) 25X1 25X1
- 3. NPIC. [redacted] RCA-09/0069/75, *Moskva Scientific Research Institute NII-1*, Jun 75 (TOP SECRET) 25X1 25X1
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