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NSC Briefing

15 September 1959

LUNIK II OPERATIONI. Initial Phases of Operation

1. Soviet Moon probe (LUNIK II) launched 0240 EDT, 12 Sept.

2. Launching followed smooth countdown of

8 hrs on Klyuchi end and only

4 hours at Tyura Tam rangehead end

3. This operation followed 3 abortive <sup>launching</sup> attempts with same vehicle1st Attempt - 6 Sept 0100 GMT (2100 EDT, 5 Sept)

Operation cancelled 2-3 hrs. before launch time

2nd Attempt - 8 Sept. 0240 GMT (2240 EDT, 7 Sept)

Operation cancelled 1 min. before launch time

3rd Attempt - 9 Sept. 0340 GMT (2340 EDT, 8 Sept)

Operation cancelled right at launch time.

4. No firm data on difficulties causing cancellations.

5. All target launch times within acceptable period for lunar probe.

II. After Launch

6. U.S. Elint (telemetry) and RADINT facilities confirmed vehicle in air.

7. U.S. and U.K. space tracking facilities alerted  about

X + 2 1/4 hours, obtained tracking data:

Jodrell Bank (UK)

12 Sept.  
About 1 1/2 hrs.13 Sept.  
About 5 hrs.

Starting at X + 5 3/4 hrs. Starting about noon

(0820 EDT)

until impact on moon.

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~~TOP SECRET~~12 Sept.13 Sept.About 9 3/4 hrs.

Starting at X + 15 1/4 hrs.

(1756 EDT)

About 1 3/4 hrs.

Starting at x + 22 1/4 hr

(0100 EDT)

About 7 MinStarting at X + 38 1/4 hrs  
1655 EDT

until impact on moon.

8. About 5 hrs. after launch, Soviets announced they had launched a "Cosmic rocket" directed toward the Moon. Announced payload and last stage were only slightly higher than those for LUNIK I.

9. Other Western stations were able to intercept radio transmissions from probe but not accomplish tracking.

10. There have been no reliable Western reports of sighting the sodium cloud which Soviets said would be used enroute to allow optical tracking.

### III. Terminal Phase

11. Soviets announced about 33 1/2 hrs. after launch (about 5 hr. before impact), probe would hit a specific area of Moon.

12. U.S. early reduction of tracking data indicated probe on impact or near-miss course (not to miss over 400 miles).

13. U.K. (Jodrell Bank) reduction indicated probe would impact.

14. Jodrell Bank and [ ] stations both tracking when probe signals abruptly ceased at about 1702 EDT, 13 Sept.

a. Termination of signals correlated closely with Soviet prediction on when probe would impact on Moon.

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- b. Both stations reported that average signal strength increased in Terminal portion of flight. This expected since part of LUNIK II radio transmissions would reflect off of Moon and re-enforce the transmissions being received on Earth directly from LUNIK II.
- c. Jodrell Bank further reported dopplar effects in radio signals received during Terminal portion of flight. This also to be expected as radio signal energy being reflected from Moon would not be in phase with the direct signals from the probe.
- d. Jodrell Bank calculated from dopplar effect that this would be equivalent to an object falling to the surface of the Moon with about the velocity induced by the Moon's gravitational attraction.

15. No visual evidence obtained of probes impact on Moon, although several astronomical observatories in Europe and Africa asked to observe. Not unexpected, as best telescopes, at Moon distance, could probably resolve no object smaller than a box-car.

#### IV. Conclusions

- 16. LUNIK II impacted on Moon about 1702 EDT, 13 Sept.
- 17. LUNIK II reportedly about same size as LUNIK I and probably utilized about the same propulsion system.
- 18. Hitting the Moon with a space probe does not require special competence in guidance - in fact, it is far more difficult a guidance problem to impact an ICBM within 5 miles of a target at 5500 miles range than to hit the moon (2160 miles diameter) at 225,000 miles distance.

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NSC BRIEFING  
BACKUP PAPER

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15 September 1959

A. TIURA TAN MISSILE AND SPACE OPERATIONS

		<u>1957</u>	<u>1958</u>	<u>1959</u>	<u>TOTAL</u>
<u>IGBM</u>	Successful	2	4	8	14
	Failure in flight	0	2	2	4
	Failure to launch	0	1	1	2
					<u>20</u>
<u>SPACE</u>	Successful	2	1	0	3
	Unsuccessful	0	1	0	1
					<u>4</u>
<u>LUNAR</u>	Successful	0	0	2	2
	Failure in flight	0	3	1	4
	Failure to launch	0	0	3	3
					<u>9</u>

B. WESTERN STATIONS MOST ACTIVE IN LUNAR II OPERATION

1. Jodrell Bank (UK): Radio telescope with 75 meter (about 247 ft) diam. antenna.

2.   
Radio telescope with  ft. diam. antenna.

3.   
Radio telescope with  ft. diam. antenna - This installation not completely operational. Field expedients allowed its usage in this problem.

4. Astronomical Observatories Watching Moon at Time of Impact: Leyden (The Netherlands); Bonn, (Germany); Uccle (Belgium); and Johannesburg (S. Africa).

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**USSR RECEIVING BACKUP**

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**SOVIET LUNAR II OPERATION**  
**CHRONOLOGICAL PRESENTATION**

<u>DATE</u>	<u>TIME</u> <u>GMT</u>	<u>I-TIME</u> <u>HRS/MIN.</u>	<u>EVENT</u>	<u>REMARKS</u>
11 Sept 59	0900	-21/40	KHB out of schedule activity began	Indicator of space activity
	1833	-8	<span style="border: 1px solid black; display: inline-block; width: 50px; height: 15px;"></span> began countdown	
	2241	-4	<span style="border: 1px solid black; display: inline-block; width: 100px; height: 15px;"></span> joined in countdown	
12 Sept	0239:41	Launch "0" Time	Launch occurred	
	0242:47	1/02:55	U.S. Eggshell rec'd telemetry	Receipt of data in U.S. delayed because of world communications troubles
	0244:20	1/04:38	Soviet Flim-Flam tracking began	A highly precise space tracking network of stations
	0256	1/016:18	<span style="border: 1px solid black; display: inline-block; width: 50px; height: 15px;"></span> rec'd telemetry & radiant	Vehicle about halfway to KAMENKA area, Communications troubles delayed receipt of data in U.S. about 2 hours.
	About 0500	About 1/2/20	Western space stations alerted <span style="border: 1px solid black; display: inline-block; width: 100px; height: 15px;"></span>	
	About 0740	About 1/5/0	Soviet announcement of Cosmic rocket enroute to Moon	

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<u>DATE</u>	<u>TIME</u> <u>EST</u>	<u>X-TIME</u> <u>HRS/MIN</u>	<u>EVENT</u>	<u>REMARKS</u>
	0820	+5/40	Jodrell Bank (UK) acquired signals from probe	Tracked for 1 hr/30 min.
	1756	+ 15/16	[redacted] acquired signals from probe	Tracked for 9 hr/47 min.
13 Sept	0100	+22/20	[redacted] acquired signals from probe	Tracked for 1 hr/45 min.
	1200	+33/20	Jodrell Bank re-acquired	Tracked for 5 hr/2 min. until impact on Moon
	1218	+33/33	Soviets issued a statement that the probe would impact at a particular area of Moon	First direct statement that LUNIK II was to impact on Moon
	1655	+38/15	[redacted] re-acquired probe	Tracked 7 min. until impact
	1705/2:20	+38/22:20	Probe impacted on Moon	

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[redacted]

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