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INFORMATION REPORT

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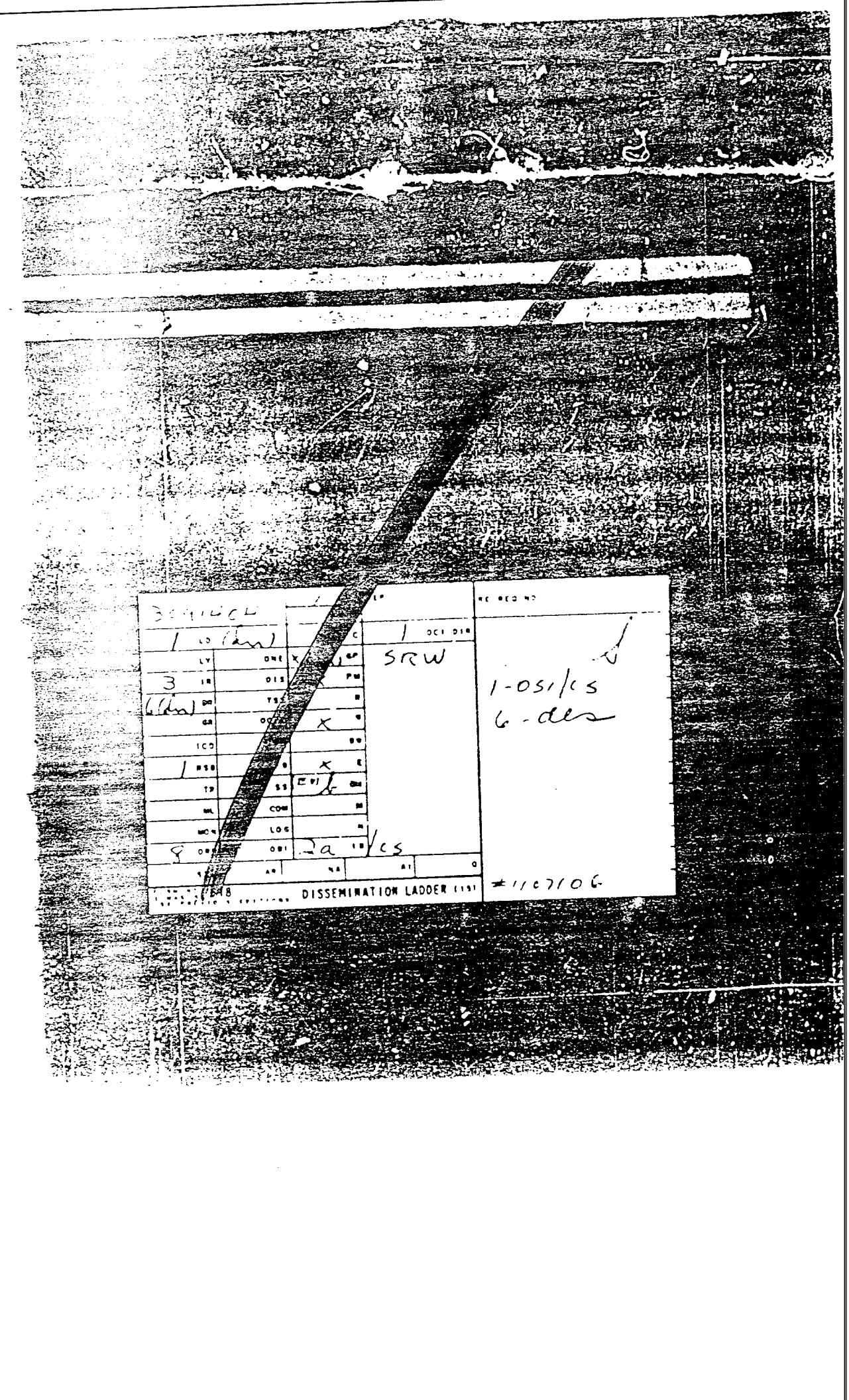
1. The Conference on Rockets and Satellites, held in Washington, D. C., from 30 Sep to 4 Oct 57, was attended by Soviet scientists, A. A. Blagonravov, B. M. Poloskov, and A. M. Kasatkin. Blagonravov was chief of the Soviet delegation. In the course of this conference, the Soviet delegation revealed considerable information on their rocket and satellite program and on a few other aspects of their participation in the International Geophysical Year. This report covers observations and events during the Rocket and Satellite Conference.

2. On 1 Oct 57 Poloskov, through Dudenkov (3rd Secretary of the Soviet Embassy in Washington, who served as interpreter), confirmed the intended use by the Soviets of 20 and 40 megacycles as the metering frequencies for the Soviet earth satellite. He described the keying of the two frequencies as follows: There will be two transmitters, one watt each, in the satellite. One will transmit for 0.7 seconds on 40 mcs., then simultaneously with the switch-off of the 40 mcs. transmitter, the 20 mcs. transmitter will come on for 0.05 seconds. Total time for repetition of the transmitting pattern is thus 0.75 seconds.

3. Poloskov stated, through Dudenkov, that the period during which the satellite would continue to transmit would be about three weeks. According to one observer, Poloskov first said in Russian when this question was asked, "I don't want to answer that question," but the official interpreter gave this as something like, "This has not yet been decided." According to one source, two transmitters, even allowing them to be lighter and slightly more efficient than US equipment, at 1 watt each, would required about eight times as much battery in weight as the US satellite, which would mean something in the neighborhood of 25 to 40 pounds of battery [illegible]; thus it would not be surprising to find them launching a satellite of 30-inch diameter instead of about 20, as in the US satellite.

4. Poloskov gave, through Dudenkov, the exact frequencies to be used: 20.005 mcs. and 40.002 mcs. Since these are not exact harmonics, the Soviets must be intending to beat a circuit in their receiver against one of these frequencies doubled in order to make their measurements. Poloskov also said that the relative stability of the frequencies would be 5 x 10^{-5}; modulation would be achieved by reciprocal keying between the two transmitters. The satellite is expected to make between two and six passages per day and to be in the zone of visibility for several minutes per passage. The transmissions from the Soviet satellite can be received by any amateur receiver or by any conventional TV-type receiver and antenna. This system of frequencies is exactly the same as the one used in the Soviet high-altitude rocket program. The satellite can be distinguished from a rocket by the Doppler effect, which should be detectable as a rise or fall in tone in earphones tuned to the transmitter in the case of the satellite. Poloskov gave the apparent change in frequency due to this effect as 500 cycles for the 20mcs. transmitter, 1000 cycles for the 40 mcs. transmitter.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5. Poloskov made reference to issues of the Soviet magazine, Radio, in which he cited some publication of data on the Soviet satellite program. He specifically mentioned issues 7 and 8 for 57, according to Dudenkov, but actually quoted from issue 6. Poloskov also said that issue 5 for 1956 gave a full technical description of the two transmitters they will use, but Dudenkov would not confirm this statement.

6. Poloskov gave as the reasons for the Soviet choice of 20 and 40 mcs. rather than 108, the following:

   a. It would be possible to pick up the satellite for tracking somewhat earlier.

   b. The lower frequencies would be more efficient and require less power.

   c. They wished to use the satellites for ionosphere studies and used these two frequencies, since they were more appropriate to these problems. They do not expect to get all of the 20 mcs. transmission through the ionosphere; on occasion, the 40 mcs, transmission would come through when 20 won't.

7. When asked how much time the US would have to prepare monitoring equipment for the 20 and 40 mcs. frequencies, Poloskov gave a variety of answers. The official one was this, "We will announce our plans in plenty of time for you to make the necessary preparations." Another version, in which Dudenkov was involved, "If our attempts are successful, you will have plenty of time." Still another version was, "If our launch is successful, we will announce it; and if the satellite lasts long enough, you'll have plenty of time to prepare your equipment." Several members of the group pressed Poloskov to say how long was "long enough," to which he offered the figure of three weeks for duration of the transmitters and a week to a year for the actual life of the satellite. Poloskov said several times that weight of the satellite would be over 12 kg.

8. Re optical tracking, the following information was obtained from Poloskov, through Dudenkov, unless otherwise stated:

   a. They expect to achieve an accuracy of 0.1 to 0.5 degrees in positioning the satellite in its orbit (determination of the orbit by observation, not putting the satellite into an orbit).

   b. They expect a time accuracy of 0.5 seconds for their measurements.

   c. Their optical stations will be composed of an array of telescopes in line normal to the meridian. These scopes are standard, having an 11-degree field of view. The telescopes will be set at intervals of five degrees, center to center, providing excellent overlap. A model of one of these telescopes was given to the US group, obviously a return for the Smithsonian gift of one of the US telescopes to Moscow last spring. It can apparently be changed by switching eyepieces to fields of view of different extent from 11 degrees. Each optical tracking station will have two lines of (ten?) these scopes; there will be 66 stations and about 30 workers at each station. This implies about 2000 workers for the optical tracking program, and since there was no mention of amateurs in this program, but only paid workers, the budget for the Soviet optical tracking program must be rather immense. Poloskov drew a diagram which indicated a 70-80 degree inclination of Soviet satellite's orbit. When pressed for an exact figure, he hedged. Knowing

said that it would be visible on at least some occasions at Minsk and that inclination would definitely be over 60 degrees. Data from the optical tracking station will be fed into Moscow as the main station. There was no statement that the principal computation center will be at Moscow. They allow two days for data to be received at Moscow, as compared with 40 minutes for the US data reporting time. They will appreciate help in observations from American amateurs.

9. Also on 30 Sep, Blagonravov made a speech, translated by Dudenhaver. In this he made these points:

a. The Soviet earth satellite will be used for: (1) measurements of local variations in the earth's magnetic field; (2) ditto for the gravitational field; (3) ionospheric experiments; (4) corpuscular radiations; (5) solar phenomena observations; (6) auroral observations; possibly some others, including relativity experiments.

b. The Soviet high-altitude rocket program will cover the same work with the exception of ionospheric studies, which cannot all be done with rockets, and including high-altitude physical and chemical reactions. The rockets will have two types of instrumentation containers--one outfitted for solar X-ray and other work, and the other outfitted for studies of corpuscular radiation, aurora, and physical and chemical reactions. These containers will be provided with photo recording devices which are intended to be released from the rockets and recovered after free fall from about 200 km. altitude.

c. Three rocket-firing areas, namely Franz Josef Land, "middle of the USSR," and the Antarctic.

d. The satellites and rockets will both be tried, and then a decision will be made as to which wins(sic).

e. The instrumentation of each rocket or satellite will depend on the results obtained with the one preceding it. This is, lack of success with one type of instrumentation will dictate a change, or some success will dictate a repeat performance to achieve more. The instrumentation of satellites will also be affected by the results achieved with some of the rockets.

f. The Soviets mentioned a mass spectrometer for use with the rocket program, but they gave no details of it.

10. In Blagonravov's opening speech at this conference on 30 Sep, he had stated that the Soviets are on the eve of launching their first satellite, using words which implied not next week or next month, but a time very close in the future--within days at the latest.

11. Some data on the delegates and other Soviet scientists was obtained 2 Oct.

a. Kazatkin has never been in the US before, and has traveled very little up to now outside the Communist bloc. He has a small soc and is himself the grandson of a rather well-known Russian artist. This grandfather was attached in some way to the court of the last Tsar, Peter, but because he preferred to paint common workers as subjects, he was regarded as showing a socialist tendency in his work, and was accepted by the Communist regime. In fact, he was one of the first artists decorated by the Communists. Kazatkin himself studied at the University of Moscow and describes himself as a geophysicist and engineer. When he was a student at Moscow 25 years ago, Kazatkin went on a scientific expedition to Franz Josef Land

during the 3rd Polar Year. He commented that the Soviets first used radio-sound techniques on that expedition.

b. Re L. I. Sedov, Kasatkin said that Sedov is a theoretician, not considered with hardware for the satellite program. Sedov is figuratively in an ivory tower and comes out of it only when he is sent by the Academy of Sciences to speak somewhere about matters in his field of theory. He is concerned with calculating means of achieving actual travel in space, and if there is ever a trip to the moon or one of the planets, Sedov may be directly involved in that.

c. Blagonravov is Secretary of the Section of the Soviet Academy of Sciences dealing with Technical Science, and as such is in practical control of most aspects of the Academy interest in the earth satellite program. Some other sections have minor parts to play, and the military has a large part, of which the Academy members are kept in complete ignorance.

d. From Kasatkin's comments it seems that the line of demarcation between the responsibilities of the Academy and of the military is at least unclear--there is some overlap, apparently. [Source comment: Kasatkin's comments re Sedov may have stemmed from jealousy, but Kasatkin has a well-controlled poker face, and it is hard to guess.]

e. Poloskov is a doctor of science and mathematics and chiefly a theoretician. He is concerned principally with the geophysical results to be obtained from earth satellite program. He has worked so far with high-altitude rockets and is included in the Soviet delegation to the present conference to cover internal instrumentation.

12. Poloskov made a statement during formal meetings 1 Oct to the effect that the Soviets do not discuss either in print or orally developments under study by their scientists until they can offer scientific proof of validity. Hence, they will not warn of the impending launching of their first satellite, but if it is successful, they will announce others ahead of time. As an example of this practice, Kasatkin was asked by a Western delegate what sort of antenna they intended to use for their satellite to achieve good results in telemetering with the 20 and 40 mcs. frequencies. Kasatkin replied that they had a design which appeared satisfactory. The delegate followed up by saying that this was something they could describe them, to which Kasatkin said, "No, the design looks all right, but we have still to test it. If it is good, we'll tell you all about it." Kasatkin also said he did not know whether the 20 and 40 mcs. transmitters for the satellite had tubes or transistors.

13. Kasatkin said that the tracking conditions for the Soviet satellite would be better than for the US satellite. Its visibility will vary considerably because there will be several types of satellite. All of them should be more visible than the US device by a factor of at least two or even more. Kasatkin stated its weight would be about 12kg. or a little over and said that the orbit they planned for the satellite would be highly elliptical, at least for the first one. All the satellites will have specular reflection, being coated with the best reflective material the Soviets have available. Kasatkin did not identify the coating material. Kasatkin confirmed the angle of inclination of the satellite orbit as much more than 60 degrees, giving it as declination from the meridian rather than inclination--the figures given were 10 to 15, or 20 degrees at the very most, off the meridian.

14. Poloskov, in answer to a question in the formal session 1 Oct. admitted that there were plans to locate Soviet Moonwatch stations sufficiently far to the south in the USSR to see the US satellites. He said that they felt it unlikely that they would pick up the US satellite, but that if they did, they would certainly inform the US.

[redacted]

13. Poloskov stated there will be 30 telescopes in each line at each optical tracking station, some lines being oriented north-south and some as nearly normal as possible to the satellite orbit. Poloskov made the statement that the Soviets plan to launch more than just one or two satellites, saying that their plans called for a very respectable number, although he would not specify further.

16. Poloskov admitted that they have used interferometric methods of determining positions of their rockets. Whether such methods will be used with the satellites or not, he did not know. Khastkin mentioned a publication by Groenguess and Zeligman (both phonetic) in which there is a description of the Soviet geophysical rockets.

17. Khastkin made informal inquiries whether it would be possible for the Soviets to buy radio equipment of the type used to monitor the 108 mcs. frequencies from the US to equip a certain number of their amateurs.

18. Khastkin also said he believed that in the first half of 58 the Soviets would be ready to show off their IGY computing center. He suggested the possibility of another big meeting in the USSR to see the Soviet computing center and hold other discussions at that time, i.e., sometime after 1 Jan and before the end of Jun 58.

19. In the evening of 2 Oct 57, Khastkin presented a paper which gave in exceptional detail a description of Soviet meteorological rockets. He based his talk on a published paper but added considerably to the published detail. Khastkin wrote his talk in the A. M. of Oct 57 and gave it, interpreted by Latishchenko, in the evening session. The paper is summarized in the following brief description of the meteorological rocket.

20. The rocket was developed in 49 and 50, and was first fired in 50, and has been in use ever since for upper-atmosphere meteorological studies. Its instrumentation is simple and reliable.

a. Launch site - portable, consisting of a steel pad without other special preparation. The Soviets use these in any place they wish and apparently have no worries about where parts may fall.

b. Length - 7 meters. Diameter - 0.435 meters.

c. Weight - at take-off without booster - 680 kg.

d. Fins - square cross with swept-back leading and trailing edges. Fin span - 1.22 meters.

e. Booster - solid propellent, of which Khastkin claimed not to know the composition. Form - hollow, i.e., arranged as six separate tubes, clustered around the tailpipe for the sustainer charge. The booster assembly extends to the rear of the rest of the rocket and has fins which line up with and increase the effect of the rocket's own fins. Booster weight - 235 kg. of which 82 kg. is propellent. Propellent burns out in two seconds.

f. Sustainer - liquid charge, kerosene and nitric acid, pressurized by compressed air. Burn time - 60 seconds.

g. Lead fuel - TONKA, the old German self-starting fuel developed at Peenemuende, is used to ignite the sustainer.

h. Thrust - 1370 kg. at 60 seconds with booster. Booster thrust is about 5000 pounds.

i. Recovery - nose and mid-section separate at about 70 km. altitude. Separation is achieved by means of explosive bolts at the joint between nose and body, but the initiation of separation was not described. In a compartment which lies in the nose-body joint are two parachutes, one for each section. These open at separation, i.e., before the full

[redacted]

altitude is reached. The act of separation adds about 30 meters per second to the velocity of the nose section. Since the nose chute is dragged along in open position over the peak of the trajectory, it serves to stabilize the instruments in this part of their flight. Peak altitude is about 80-90 km. The chute is not much drag until a return to an altitude of about 60 km., and it then begins to function, reducing the landing velocity of the nose section to about four to five meters per second. The weight of the nose section is 72 kg. Only the needle nose and the batteries need to be replaced, while the rest of the nose section can be re-used as many as five times.

j. Mid-section - described by Kassatkin as composed of structurally stressed tanks, interconnected. He drew a sketch which showed three spherical (or near-spherical) tanks, from nose to rear in order - compressed air, kerosene, nitric acid.

k. Parachutes - same type chute for both ends. Rectangular, silk, 64 square meters. Shroud lines eight meters long.

l. Launching - The launch stand is 30 meters high, has four spiral rails which make ½ turn in the lenght of the stand. This gives a spin of about 20 rpm. to the rocket. The stand is set up on the steel pad, and the stand is tilted to compensate for wind effect, which is measured beforehand by means of balloons. An attempt is made to so compensate for wind effect that the sections land again fairly near the launching site. Kassatkin stated that they often recover within a kilometer of the launch site.

m. Ignition and burn-out - As the booster ignites, the pressure valve for the sustainer opens, and by the booster burn-out, the sustainer is at full power. Velocity at booster burn-out (two seconds) - 170 meters per second. At burn-out of sustainer (50 seconds) - 1100 meters per second.

n. Nose section - needle nose is 26 mm. in diameter, 743 mm. long. It contains:

(1) Miniaturized Pirani gauges covering pressure ranges from five mm. pressure to 5×10^{-3} mm.

(2) 6.5 calibers back from the tip there are two interconnected pitot-type openings.

(3) Several openings connected to barometric pressure gauges.

(4) Four thermocouples of 40-mil iron tungsten for measurement of boundary layer air temperature.

(5) Four bolometers, located at the base of the needle nose.

(6) One thermocouple for measurement of nose skin temperature.

(7) One thermocouple, located near Pirani gauges, for correction of the pressure measurements.

The nose section also contains four synchronized photographic cameras for the determination of instrument attitude during flight.

o. Metering - all the instrumentation uses unbalanced Wheatstone bridge connections. The diagonals of the bridge are connected to opposite segments of a 60-segment commutator of which the brushes connect to the transmitter. Voltages picked off vary from minus 100 to plus 100 millivolts. The frequency shift for the transmitter is 50 kc. Transmitter output is strictly FM. This arrangement gives 30 available channels which are sampled every 2.5 seconds--the commutator rotation time is five seconds. Power is obtained from cadmium batteries.

The entering receiver has a sweep frequency, and the presentation of the sweep on a cathode tube is photographed on film which has a speed of three cm. per second.

p. The instrumentation has in-flight calibration, and reliability is assured by recording each datum four times in each 2.5 seconds.

q. Pressure measurements - from 760mm. down to 55, these measurements are made with miniaturized membrane gauges. The Pirani gauges cover the pressure range down to 5×10^{-3} mm. These are of two types, of which one is a 30-micron tungsten wire gauge, and the other is a spiral tungsten wire with a spiral diameter of 60 microns. There are three sub-types of this latter type, which were mentioned, but not described.

21. Although the use of thermocouples to measure boundary layer temperature results in inaccurate measurements, the Soviets claim to have developed means of making accurate corrections. Variations in temperatures measured from shoot to shoot are about 30 to 40 degrees C., of which Kasatkin claimed very little represented error.

22. Kasatkin stated that interferometric methods of measuring rocket positioning have been used with the Soviet geophysical rockets but not with the meteorological rockets.

23. Since 50 they have fired over 100 of these meteorological rockets and will fire more for the IGY. The aims of this rocket are about the same as the old A-5 and smaller than Wasserfall.

24. The Soviets use a phototheodolite for measuring accurate altitude for their rockets. In cases in which they make a shoot in cloudy weather or at night they have used crude radio-location methods of altitude determination, but they have kept shoots in which this method was necessary down to a minimum.

25. Kasatkin said, in past sessions talks, that he could guarantee right now that the Soviets would be willing to exchange equipment. (No particular type of equipment was specified.) However, he could not guarantee that exchange visits of personnel to all sites would be acceptable, since some of the sites are controlled not by Soviet Academy of Sciences but by other bodies over which the Academy has no influence. Visits to such places as Franz Josef [illegible] or some other out-of-the-way launch sites might be arranged, but he would have to investigate this. Visits to the computation and data centers would be definitely possible. There was some discussion between Kasatkin and [illegible] of the UK, regarding the exchange of complete meteorological rockets. The US group took no part in this, but Kasatkin seemed to feel it was worth discussion.

26. Poloskov corrected the frequencies which were given for the two satellite transmitters. The corrected figures are 20.005 mcs. and 40.01 mcs.

27. Kasatkin was asked about the Soviet atmospheric model used in calculating their satellite life. He said they had taken one from Mitra's publications as an unfavorable example, and another whose source was unidentified and had struck a mean. They calculated their satellite life to be "over several weeks" (UB calculations indicate something between 9-10 months and 8-9 years). The Soviet satellite will have no provision for internal drag measurements.

28. An Englishmen, Blackburn, who is now with the Royal Aircraft Establishment (at Farnborough, I believe) had come up with an idea based on the Soviet use of 20/40 mcs., which he presented in an informal paper 2 Oct in the afternoon. This idea was essentially to use the 20 mcs. transmissions to study the ionosphere above the F layer by organizing an amateur listening net, which would detect the scatter of the 20 mcs. signals from refracting layers above the F. The Soviets were interested in this and asked Blackburn to write out the elements of his idea so that they could consider doing it.

29. During the session on 3 Oct Kasatkin stated he would not be more precise in giving numbers of satellites to be launched by the USSR than the expression "a respectable number, more than just one or two," reported previously. Kasatkin also said that the figure of 12 kg. which was attributed to Poloskov as the weight of the first satellite is not definite at all. Kasatkin stated Ginsberg made a set of calculations for a satellite, using 12 kg. as the hypothetical weight, but this is not decided on as the weight of any particular satellite. Actually weights will vary, but the stability of the smallest will be as good as that of the US satellite, and all will definitely have specular reflection. Kasatkin also confirmed the great inclination of the Soviet satellite orbit, but refused on this occasion to limit it to values above 70 degrees; he stated that it might be that one or more would have orbits inclined at 60 degrees or thereabouts to the equator, but that it was also perfectly true that they were planning orbits in general for inclinations above 70 degrees. Kasatkin would give no definite figures on apogee or perigee except that neither would be less than 200 km. As to satellite l[illegible], Kasatkin commented that since they were providing for a three-week life for the transmitter batteries, they obviously expected the satellite to last at least that long.

30. On launching methods, Kasatkin had absolutely nothing to say.

31. On launching sites, Kasatkin refused to make comments. However, it was pointed out to him that once the satellite was launched and observed outside the Soviet Union, it would be possible to calculate the launching site with pretty good accuracy from the orbit of the satellite. His reply was "Yes, well, write down the questions you want answered and we'll try to give you or send you answers to some of them at least."

32. Kasatkin undertook to walk from the Statler Hotel to the meeting on 3 Oct in the afternoon and arrived very late at about 1600 hours. He had been sought by both US and Soviet groups during the afternoon, but had apparently spent two hours at least wandering about Washington. He offered no explanation, and it was presumed by others that he had been more or less lost.

33. During the morning of 3 Oct, Poloskov gave a paper on ionospheric measurements, which he did not pretend was a program, but only a collection of observations. In this paper he mentioned radar as a means of tracking high-altitude rockets, without giving any real information. He also stated that the satellite appeared to the Soviets to offer relatively poor chances of making good observations of local ionospheric conditions. Poloskov also mentioned relativity experiments. These were of [illegible] types, which were presented as if they were the only relativity experiments which the Soviets had seriously considered. One would be the testing of the effects of relativistic mechanics on the satellite orbit. They have calculated that this effect would amount to 1500 seconds of arc per century for a satellite at 200 km. altitude. Since the life of such a satellite would be only three days, there would be no chance of making effective experiments, since other perturbations would certainly obscure any relativistic effect. The length of life necessary in a satellite to permit accurate enough calculations of the orbit for tests of relativistic effects would be very great. They expect to try this, but reserve judgment on the likelihood of success.

34. Poloskov also mentioned the testing of the relativistic effect detectable in radio emissions, but dismissed this as completely masked by the Doppler effect. Poloskov was asked if the Soviets had considered testing the gravitational "red shift" with extremely accurate clocks, to which he replied that they had looked into this problem and had considered some of the English clocks which might be available, but that these were all too bulky to be practical for use in their satellites.

35. At the end of Poloskov's talk, Blagonravov rose and added some comments, mostly on orbits. Since he gave this talk in English, he was harder to understand than if he had talked in Russian and let a good interpreter help him out. The gist of what he said is as follows:

a. The beginning of the talk was a standard sort of talk on the Soviet calculations of orbits, and so on. At one point, Source has the impression that something was said which would indicate that the Soviets are planning to use radar to establish the point of final-state firing, and for the actual triggering of the final stage. This was somewhat difficult to seize, and no one could confirm it.

b. Blagonravov summarized the results of Soviet calculations thus: a satellite with diameter 50 cm. and weight of 10 kg. in an orbit of perigee 960 km. and apogee 800 km. would have a life of 15 months. Same satellite, perigee 500 km., apogee 1500 km. - life 30 years. With perigee 200 km., apogee 400 km., life is three days. The Soviets have calculated that they can get a relatively great increase in life of the satellite at quite a small increase in cost by using orbits in which the apogee is increased and the perigee remains the same. Blagonravov made the point that if the position of the satellite in its orbit can be determined within several meters, it can be used to determine local gravimetric anomalies. To this end he believes the US optical tracking methods will be a great help.

36. One of the US groups repeatedly queried the Soviets for data on the 200 km. geophysic rocket. Finally one of them (which, not known) said essentially this: "Look, this is a military rocket, and even if we knew something about it, which we don't, we couldn't tell you."

37. The session on 4 Oct produced no information of significance. However, at the cocktail party given at the Soviet Embassy in the evening, the whole group, Soviets included, was astounded when the US delegate, L. V. Berkner, asked for permission to make an announcement and congratulated the Soviet scientists on being the first to launch an earth satellite. The news officially had not reached the Soviet Embassy staff as yet. It was understood by the US group that Berkner had received information on the Soviet launching from a New York Times representative through another US delegate. Within a short time, the Soviets received notice on their own account and confirmed Berkner's announcement.

38. The US delegation left the reception early and took immediate steps to alert US tracking and observation stations. At 0600 hours, 5 Oct, the following tentative conclusions had been reached regarding the Soviet satellite on the basis of information obtained from US-controlled observation sites:

a. Launch time: 1705 hours Eastern Daylight Time 4 Oct 57.

b. Launch site: somewhat north and slightly west of the northern end of the Caspian Sea.

c. Fired in NE direction at time indicated (local midnight). Source stated that the announcement of the launch had to be made before the first orbit was complete.

d. The Soviets announced that the satellite carried nothing but two transmitters and some temperature-measuring equipment. Source stated that this sounds like a lie to him because the signals are not nearly as simple as would be suggested by such an arrangement. The signals are keyed reciprocally, but they do not sound like a simple case of reciprocal keying.

e. It is believed that RCA picked up and recorded signals from the Soviet satellite on its second passage.

f. The Soviet statement that the satellite life would be three weeks is believed by source to refer to its transmission life (batteries). The characteristics of the satellite should insure its continued flight indefinitely.

g. It is possible that the transmission power is greater than one watt, since exchange was picking up signals from the satellite on its second [illegible]

the pole, over the Atlantic, and signals were received simultaneously on both US coasts.

h. The exact telemetering frequencies are as given in the formal session at the conference: 40.002 mcs. and 20.005 mcs.

[redacted] Comment: It seems likely that the Soviets are using S and/or X-band radar to skin-track their satellite. Good receivers could pick up Soviet illuminations of the satellite if placed properly--and not necessarily very close to the USSR. England could be used as a site, and besides, such observations not only would yield information on the satellite position but also, since reflection from the satellite is specular, would reveal the location of the Soviet illuminating radar. No active radar work should be necessary; only passive taking-advantage of the Soviet active work. Results should be fairly accurate.

39. Blagonravov stated during the morning session, 5 Oct 57, that there had been two versions of the Soviet satellite ready to launch when he departed from the USSR to attend the present conference, but that he had not known which was to be the actual choice. He provided information in the form of a sketch, showing the satellite with four equatorially-mounted whip antennae, shown in a semi-folded position, suggesting that they are intended to be carried folded in the vehicle, and stand out from the satellite body when it is freed from the vehicle. Blagonravov also said that he expects the next satellite to be launched in about two months.

40. The data published in news accounts on the satellite's characteristics is all accurate. Blagonravov said that the present satellite carried a power supply, two transmitters, and one thermocouple for the measurement of temperature. The interior of the satellite is filled with dry nitrogen before launching. No statement as to pressure of the nitrogen was made.

41. The life of the satellite itself is expected by the Soviets to be about two weeks. They have provided a power supply which should be sufficient for the life span which they hope to attain.

42. The Soviet satellite, because of the orbit chosen, will pass over the US seven times each 24 hours. Visual observation is assured, since the satellites will be between 4th and 9th magnitudes (i.e., will have the apparent brightness of stars of these magnitudes).

43. Blagonravov stated that on the occasion of the 100th anniversary of the birthday of Tsiolkovsky on 17 Sep 57 a conference was held in the USSR at which exhaustive reports were presented. These are being prepared in form for publication and will be furnished as an addition to the reports of the present conference. They hope that this first step will be all that one might wish.

44. Source stated Blagonravov berated the US and its scientists for bragging about things not ready to be done. Most of the delegates were not much impressed by this, but the Iranian delegate to the present conference took it to heart and was considerably impressed.

- End -

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