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February 13, 1959

MEMORANDUM OF CONFERENCE WITH THE PRESIDENT  
February 10, 1959

Others present: Dr. Killian, Dr. Purcell, Dr. Land  
General Goodpaster

Dr. Killian said the group had come in to report on some recent progress, particularly in advanced reconnaissance devices. The first is an acoustical system for the detection of missiles leaving the atmosphere. This has great promise for monitoring Soviet missile firings. The system is based upon the existence of a "sound duct" which gives extremely high quality results. The President asked why this duct exists, and Dr. Purcell said it is because the temperature of the air decreases up to a certain altitude and then gets higher. At this level, sound tends to stay in the layer of air. The process is to put a small balloon with a listening device at that altitude. Dr. Killian said that, from six points located around the world, it would be possible to locate missile firings. The President asked what is the height of this layer, and its thickness, and how the balloons could be kept at the right height. He thought this might be difficult. Dr. Purcell said that the problem is tricky but that the experts think it possible of solution. The layer is roughly at 70,000 feet altitude, but it is of the order of 30,000-40,000 feet thick. The President thought the scheme sounded splendid. He was concerned how soon information about it would leak. He thought it should be controlled and managed at a very high level. Dr. Killian said this would be done. He pointed out that there are certain problems in obtaining use of just the right spots around the world; he mentioned Asmara in this connection.

The President next commented on the way irresponsible officials and demagogues are leaking security information and presenting a misleading picture of our security situation to our people. Some of our senators in particular seem to be doing this. In turn, the munitions makers are making tremendous efforts toward getting more contracts and in fact seem to be exerting undue influence over the Senators. Dr. Killian observed that where we have had a strong central laboratory,



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for example in the atomic energy program, we have made excellent progress, but where research and development has been dispersed over industrial firms such progress has not been achieved. The President cited the instance of Senator Symington being accompanied in various official conversations by a man who is a Vice President of Convair.

Dr. Land next discussed the Corona project. He said that if the Thor missile can be brought to function properly, the rest of the program is in good shape. In particular, the development of the high grade optical and camera equipment needed has made excellent progress. Recovery operations constitute a major problem; General Electric is working on this, and it seems likely that adequate solutions will be found. The President asked how high these vehicles would be above the ground. Dr. Land said he thought they would be about 160 miles up. By sending them no higher we can use more of the allowable payload for film. He thought we could expect a resolution of 20-50 feet in this photography. He commented that the security regarding the photographic activity is still very high, in spite of a good deal of uninformed speculation.



The President next said that he is thinking of making a two-day visit to missile production facilities, operational bases, etc. Dr. Killian commented that his visit might take him to the missile ranges, where a major problem of coordination of management and control is arising. The President asked Dr. Killian to give him a memorandum on this, and said he would ask Mr. McElroy to go into the matter. He said that Dr. Killian's comment indicated that the test ranges are developing more elaborate functions than he had previously understood to be involved. He asked Dr. Killian to identify the problem and suggest an approach toward a solution and he would take the further action.

The President next discussed some questions relating to acceleration needed to get a vehicle through the atmosphere. Dr. Purcell indicated that forces are of the order of 5 g., lasting for a minute or so; in coming back into the atmosphere forces may rise to 6 g. at least momentarily. The President asked what would happen to an object fired into space at an extremely high velocity -- specifically whether it would become a satellite of the sun. Dr. Purcell indicated that if it had approximately twice the speed of the earth around the sun, it would be above the "escape velocity" from the sun's gravity.

UNCLASSIFIED

[2/3/59]

UNCLASSIFIED  
TOP SECRET

Dr. Killian next reported on the progress of the high-altitude, high-performance reconnaissance aircraft. Dr. Purcell said that it derives its low radar visibility from its shape. The best shape would be a flying saucer with no equipment on the under side; this is next best -- a triangle with all equipment features on top. The President thought that at such high speed, flying at such a great altitude with little resistance, it should have great range, and Dr. Purcell confirmed this. He added that, moving so fast, it will be very hard to track by radar because it moves so far between sweeps. Dr. Land commented that it could be used to carry a 700-pound payload, and could probably be sent in over an area unseen until it dropped its payload.



Dr. Killian next said he was very much impressed with the importance of getting hard intelligence on the Soviet missile program. The President asked if there is any possibility of the Soviets putting missiles underground and hiding them. Dr. Killian recalled that we are doing something of this with our Minuteman program, but the locations will be quite visible while construction is going on. Dr. Killian commented that he sees a need for more stability in our military programming -- we should strive harder to avoid wide swings and sudden changes in these programs. The President agreed strongly and recalled that he had worked at this very goal since 1930, commenting that there is nothing as expensive as shuttling between haste and complacency. He commented that stability by no means signifies stagnation. Dr. Killian said he had an analysis under way on how to bring more stability into the program in the face of a necessarily high degree of uncertainty. The President said that he asked the questions as to whether we have a sufficiency, whether it is efficient, and whether it is properly deployed; if so, he is ready to beat off the self-proclaimed experts calling for sudden changes. Finally, he referred to the report of Dr. Killian's committee in 1955 which really initiated the development of the long-range ballistic missiles.

*A. J.*  
A. J. Goodpaster  
Brigadier General, USA

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