



Copy No. [redacted] 24 January 1963

MEMORANDUM FOR: Director, National Reconnaissance Organization

THROUGH: Deputy Director (Research)

SUBJECT: NPIC Recommendation for Satellite Photography

REFERENCE: Memorandum from Deputy Director, NPIC, to Director, NRO, dated 23 August 1962; subject: NPIC Photographic Quality Requirements

1. Discussions with members of your staff concerning proposed reconnaissance systems have indicated the desirability of providing additional comments from the NPIC concerning photographic quality requirements. As stated in the above reference, and as expressed by the Intelligence Community, satellite photographic collection systems fall into two distinct categories. These are determined on the basis of system detection performance. They are:

- a. Surveillance. This category is composed of satellite photography which can provide general wide-area coverage on a fairly frequent repetitive basis. The current NURAL system falls within this category and meets many of the requirements for a surveillance system.
- b. Technical Intelligence. This category is composed of photography of sufficient quality to obtain detailed technical intelligence and requires the capability to detect ground object sizes in the range of one to two feet. Satellite photography which would fall within this category has not yet been achieved.

2. It would be extremely useful if surveillance photography were of technical intelligence quality, so that targets acquired in surveillance could be analyzed in whatever detail was required, without the necessity for other photographic coverage. However, it is well recognized that for practical design reasons the two goals are incompatible; that is, large area coverage and high resolution in spot areas cannot be combined without sacrificing one or the other.

Declassified and Released by the NRO

In Accordance with E. O. 12958

on NOV 26 1997

3. At the present time the MURAL system is the main source of satellite surveillance photography. It is reliable, provides wide-area coverage and does allow NPIC to answer many intelligence requirements through its 13' (±) ground resolution capability. However, both in the surveillance role and in the technical intelligence role, which it has to play in the absence of a better system, it has shortcomings which could be overcome in part with a major improvement in resolution. For example, only at optimum performance can we establish aircraft and ship classifications which are essential in maintaining order of battle; we have occasionally missed early identification of hardened ICBM sites because of lack of clarity of detail; there are some uncertainties regarding level of assurance of identification of SS-6 ICBM launch pads; we have had considerable difficulty in analyzing the configuration of hardened ICBM site prototypes; there are many uncertainties and problems regarding the nature of Soviet anti-missile developments, the solution of which is particularly critical to national defense; we cannot determine the size or type of missile associated with new launch areas at Tyura Tam, and have just about used up our reserves of detailed knowledge obtained from the U-2 over Tyura Tam; we probably could not have detected with certainty the Soviet build-up of cruise missiles and tactical missiles in Cuba from satellite photography alone, yet this is the type of situation which is particularly the goal of a surveillance system. These examples are not intended to discredit the MURAL program which has been extremely successful and has brought in a wealth of exploitable photography, but is intended to indicate that there is room for major improvement.

4. NPIC has been informed of a proposed M₂ reconnaissance system, which has initial design quality goals in the 6' (±) ground detection area and yet retains wide-area coverage. With experience and continued product improvement, the proposed M₂ system appears to have quality potential in excess of that stated as initially achievable. The M₂ system, from NPIC's viewpoint, represents a potentially significant gain in intelligence collection capability. For the first time, it appears to us that a program is on the horizon which can fulfill requirements for a second generation photo surveillance system. It is not just a minor incremental improvement, but a major improvement which would permit a major breakthrough in exploitation if the design goals can be realized.

5. With the above comments in mind, it appears to the NPIC that it would be extremely desirable to proceed with development of a surveillance system with performance parameters of the M₂, separate and distinct from the still essential requirement to obtain a system which will get into the detailed technical intelligence field.

ARTHUR C. LUBBAHL
Director

National Photographic Interpretation Center