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ARPA Order No. 38-59

November 5, 1958 Date

TO: ~~Commander~~  
Air Research and Development Command  
Andrews Air Force Base  
Washington 25, D. C.

1. Pursuant to the provisions of DoD Directive 5105.15, dated February 7, 1958, you are requested to proceed at once on behalf of the Advanced Research Projects Agency with the project specified below. Additional details and directives may be issued by ARPA from time to time and will become a part of this Order when so specified.

2. Study and development begun as Subsystem G of Weapon System 117L are to be continued, in accordance with this outline, as an independent project, to result in an orbitally flight tested Missile Defense Alarm Satellite (MIDAS) (U). Tasks to be carried out are:

a. Prepare for approval by ARPA a definitive statement of work remaining to be done and costs to be incurred on development, ground testing, and limited orbital flight testing of a Missile Defense Alarm Satellite, including necessary communication capability, and including studies aimed at defining a development program for a more advanced capability for missile defense alarm. The project definitively stated should be completed by April 30, 1960, and the work statement should indicate intended dates of reaching important milestones, against which progress of the projects can be monitored, and estimates for work to be performed (1) by ARDC, (2) by contract, and (3) at other Government facilities. The statement of the program to be prepared should be submitted to ARPA by December 15, 1958.

b. Continue fabrication of two completely functioning infrared-sensing satellite payloads. Plan completion in fully functioning form of an additional payload, initially only a thermal simulacrum.

c. Initiate study and development of satellite/ground communication equipment specifically needed for initial flight tests.

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d. Initiate design effort necessary properly to integrate payload and TEOR-boosted SENTRY vehicle on an experimental basis, and to insure availability of auxiliary power adequate to permit significant data accumulation during test flights.

e. Plan early orbital flight experiments, to use the basic satellite vehicle of the SENTRY program, boosted by TEOR missiles. These experiments should evaluate satellite stabilization and communications, as well as infrared payload and signals.

f. Initiate preliminary design study of infrared trackers and precise direction readout devices, leading toward an integrated missile-defense alarm payload of more advanced capabilities.

g. Plan further orbital experiments, to use vehicles and payloads more advanced than those of the initial flight tests.

h. Examine the possibility of designing simple experiments and building simple payloads to make use of possible excess load capacity on missile or satellite flights of other programs, for obtaining additional data of value to the MIDAS project.

i. Continue, for the present, experimental program to secure physical data on infrared phenomena, as needed for effective engineering development of the alarm satellite. Process results of these experiments, and of other measurement programs, to contribute most effectively to the MIDAS project.

3. This Order makes available \$750,000 under appropriation and account symbol "97X0113.002 Salaries and Expenses, Advanced Research Projects Agency, Office of the Secretary of Defense" for obligation by the Air Research and Development Command on behalf of the Advanced Research Projects Agency only for purposes necessary to accomplish the work specified herein. These funds are for the period November 1, 1958, to January 31, 1959, and immediately available for direct obligation and for use in reimbursing the Air Research and Development Command for costs incurred under this Order. The funds made available are not for the construction of facilities.

4. The costs chargeable to this project (formerly Subsystem G) since July 1, 1958, and charged to ARPA Order No. 9, shall be identified and transferred to this Order. Funds shall be adjusted by ARPA as appropriate.

5. The Director, Advanced Research Projects Agency, will provide policy and technical guidance either directly or through designated representatives. The Air Research and Development Command will be responsible for arranging for the detailed technical directions necessary to accomplish the specified objectives and to comply with ARPA policy and technical guidance. This general relationship may be specified in greater detail by amendment to this Order if such action is necessary

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6. The Director, Advanced Research Projects Agency, will be kept informed of the status of work assigned under this Order by a monthly progress report and a semi-annual technical report to be prepared and submitted in accordance with procedures outlined in Attachment No. 1. These reports represent ARPA's total foreseeable requirement for recurring reports based on this Order.

7. The utilization of equipment and materials procured in connection with this project for other projects is subject to the direction of ARPA. Notwithstanding, final disposition of such equipment and materials shall be made in accordance with standard procedures. Any technical and scientific information relating to work under this Order which may be published from time to time shall give appropriate credit to the ARPA project. No scientific and technical progress and status reports on ARPA's projects or final completion reports prepared specifically at ARPA's request shall be made available to other agencies or individuals without approval of ARPA.

8. ARDC shall be responsible for preserving the security of this project in accordance with the security classification assigned and the security regulations and procedures of the Department of the Air Force.

9. Notwithstanding any other provisions of this Order, ARDC shall not be bound to take any action in connection with the performance of this work that would cause the amount for which the Government will be obligated hereunder to exceed the funds made available, and the obligations to ARDC to proceed with the performance of this work shall be limited accordingly. ARDC shall be responsible for assuring that all commitments, obligations and expenditures of the funds made available are made in accordance with the statutes and regulations governing each matter, provided that whenever such regulations require approval of higher authority such approvals will be obtained from or through the Director, ARPA, or his designated representative.

/s/ Roy W. Johnson  
/t/ Roy W. Johnson  
Director

Attachment:  
No. 1

cc: Secretary of the Air Force

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ADVANCED RESEARCH PROJECTS AGENCY  
Washington 25, D. C.

ARPA Order No. 38-59  
Amendment No. 3

April 16, 1959 Date

TO: Commander  
Air Research and Development Command  
Andrews Air Force Base  
Washington 25, D. C.

On the basis of an on-site detailed technical review of the MIDS Phase I Development Plan, the \$20,200,000 FY 1959 Phase I program relating to the four experimental flights is approved subject to the following changes:

1. The program objective shall be strongly reoriented to give a high priority to deriving from each flight a maximum of quantitative, scientific, and engineering data to insure the accumulation of sufficient data to:

a. Predict the success or failure of an alarm system in an operational role:

b. Permit progressive improvement of the alarm system during the development program; and

c. Permit design of other infrared equipment for optimized operational early warning or tracking system.†

2. The contractor shall be directed to analyze quantitatively the gains in background rejection, possible through signal-data processing, for example for use of moving-target-indicator methods.

Details on the above changes will be forwarded under separate cover.

In addition to Phase I, FY 1959 funds in the amount of \$2,600,000 are authorized only for the urgent lead-time procurement required for boosters, vehicles and engines under Phase II.

Total FY 1959 funding in the amount of \$22,800,000 mentioned above is contingent upon ARPA's receipt of additional funds from the Secretary of Defense Emergency Fund. In the interim, the fund availability is hereby increased from \$8,000,000 to a new total of \$10,800,000 under appropriation and account symbol #97X0113.002 Salaries and Expenses, Advanced Research Projects Agency, Department of Defense."

/s/ Roy W. Johnson

Roy W. Johnson  
Director

Copy to: Secretary of the Air Force

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ADVANCED RESEARCH PROJECTS AGENCY  
Washington 25, D. C.

ARPA Order No. 38-59  
Amendment No. 2

April 1, 1959 Date

TO: **Commander**  
**Air Research and Development Command**  
**Andrews Air Force Base**  
**Washington 25, D. C.**

1. Paragraph 6, ARPA Order No. 38-59, dated November 5, 1953, is superseded by the following Attachment No. 1 to the basic Order is superseded by Attachment No. 1 to this Amendment.

The Director, Advanced Research Projects Agency, will be kept informed of the status of work assigned under this Order by a Monthly Progress Report, a Quarterly Progress Report and a Semi-annual Technical Summary Report, to be prepared and submitted in accordance with procedures outlined in Attachment No. 1. These reports represent ARPA's presently foreseeable requirements for reporting under ARPA Order No. 38-59.

2. Distribution of AFPMR reports required by ARPA on work performed under ARPA Order No. 38-59 to agencies within USAF will be decided by AFPMR in consonance with established USAF procedures. Requests for copies of these reports by agencies outside USAF will be referred to ARPA for approval.

  
Roy W. Johnson  
Director

1 Incl:  
Attachment No. 1

Copy to: Secretary of the Air Force  
Cdr., ARDC  
Cdr., AFPMR

Upon removal of attachment this document becomes Unclassified.

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Attachment No 1

ARPA Order No 38-59  
Amendment No. 2

## PREPARATION OF REPORTS

### I. Monthly Progress Report

a. Narrative Section. A letter report will be submitted by AFEMD giving a narrative account of work performed under ARPA Order No. 38-59. The letter report will cover work performed each month with the exception of the last month (March, June, September and December) of each calendar quarter. The quarterly progress report prescribed below will be submitted in lieu of the letter report for the last month of each calendar quarter. The initial letter report under this directive will be for the month of April 1959. Letter reports will be submitted in quadruplicate to the Director, Advanced Research Projects Agency, and are due within 10 days following the month reported.

The report will be in letter form, preferably not exceeding three pages, and will present a brief narrative summary of progress during the reporting period. Each report should make specific reference to the following topics: (1) technical status, (2) problems encountered, (3) work schedules, and (4) action required by ARPA. Photographs and illustrative material will be submitted as appropriate. The ARPA Order number, name of contractor, date of contract, contract number, amount of contract, and title of the project should be stated in the heading of each report.

b. Milestones Section. Instructions for preparation of a milestones progress report, which requires use of a standard format in reporting actual progress against planned progress in accomplishing major milestones, will be issued at a later date.

### II. Quarterly Progress Report

The purpose of the quarterly progress report is to provide the President and the Secretary of Defense and their staff with periodic summary information by which they may be kept informed of overall progress and results in certain of the satellite projects.

Frequency and Due Date. The quarterly progress report will be prepared for submission to the President each calendar quarter and will show a summary of progress and significant events during

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ARPA Order No. 38 59  
Attachment No. 2

The report should reach ARPA no later than the 15th of the month following the close of the quarter reported. When the 15th falls on a non-workday, the report will be due the following workday. The initial report under this directive will be for the quarter ending March 31, 1959.

Content: The quarterly progress report will cover the progress, special achievements, problems encountered, schedules and overall status of the program. It is essential that the report be carefully organized and that the material is presented briefly, clearly and concisely.

Format

**PART A. Brief of Progress During the Quarter** The brief should not exceed one-half page in length and should present the outstanding highlights of progress and status of the program.

**PART B. Topical Summary** The topical summary consists of a series of summary headings, each of which is followed by a summary paragraph or paragraphs. The summary paragraphs are unlimited in number but generally should not exceed 15 lines in length. Each paragraph should be abstracted in a marginal heading appearing at the left margin opposite the first line of the paragraph. All elaborative detail should be relegated to Part C and reference noted thereto, as appropriate. Suggested summary headings for the MIDAS Project are:

**MIDAS PROJECT**

**MIDAS FLIGHTS**

Flight I  
Flight II, etc.

**FACILITIES AND SITES**

Launch  
Tracking

**GENERAL**

Infrared Subsystem  
(Certain basic subsystem hardware for the MIDAS Project presently being

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Attachment No. 1

~~SECRET~~ARPA Order No. 38 59  
Amendment No. 2

## GENERAL (continued)

developed under the DISCOVERER Project will be reported under the DISCOVERER Project and reference made thereto.)

These headings may be revised or added to by the preparing agency from time to time, as appropriate.

**PART C. Descriptive Detail** All detailed description and backup information considered necessary to the completeness of the report will be confined to Part C. Examples are description and layout of tracking stations, map sketches of location of facilities, and details of design and testing of equipment. A glossary sheet listing standard equipment and systems terminology and specifications should be included.

**Photographs and Sketches.** Photographs and sketches collected to show progress of the work and depict development of equipment should accompany each report. To facilitate printing, photographs and sketches will be in black-and-white glossy finish on 8X10-1/2-inch paper. Each photograph should contain some commonly known object to indicate scale and be clearly captioned.

**General** The quarterly progress report will be assembled with those of other satellite projects into a single Department of Defense Military Satellite Program Progress Report and transmitted to the President. It is desired that the format of the report to the President be carefully followed in preparing the report for your project to enable ARPA to print and transmit the consolidated report to the White House with minimum rewriting and editing delay.

### III. Semiannual Technical Summary Report.

A technical summary report will be prepared semiannually for periods ending June 30 and December 31 of each year. The report will present a concise and factual discussion of technical findings and accomplishments during the period. Six copies of the report will be submitted to the Director, Advanced Research Projects Agency, and are due within 30 days following the close

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Attachment No. 1

ARPA Order No. 38-59  
Amendment No. 2

of the report period Upon completion of the project, a final report will be submitted summarizing the entire project. The final completion report will be submitted in lieu of the regular semiannual report to reach the Director, Advanced Research Projects Agency, within 60 days following project completion. The ARPA Order number, name of contractor, and title of the project should be stated in the heading of each report.

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