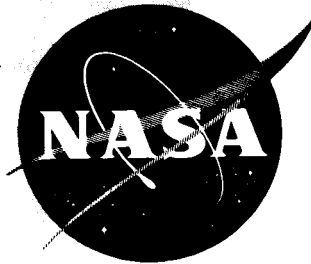


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MSFC  
MPR-A-63-1

January 1, 1963

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NATIONAL AERONAUTICS  
AND SPACE ADMINISTRATION

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**ANNEX**

(NASA-TM-X-73388) AGENA MONTHLY PROGRESS  
REPORT, DECEMBER 1962 (NASA) 23 p

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AGENA MONTHLY PROGRESS REPORT

by

LIGHT AND MEDIUM VEHICLES



**GEORGE C. MARSHALL**


**SPACE  
FLIGHT  
CENTER**

HUNTSVILLE, ALABAMA


Classification Changed

TO: **UNCLASSIFIED**

By Authority of Stan Frager-SCO  
Date 4-29-77 By MW



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MPR-A-63-1

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AGENA MONTHLY PROGRESS REPORT

for

December 1962

(U) ABSTRACT

This report covers the activities during the month of December along with current status and future plans, and schedules relative to the Agena Launch Vehicle Programs. The programs are progressing in an orderly manner with only minor problems.

[REDACTED]

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AGENA MONTHLY PROGRESS REPORT

DECEMBER 1962 (U)

AGENA SYSTEMS OFFICE

[REDACTED]

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## ABBREVIATIONS

AGE	Aerospace Ground Equipment
AMR	Atlantic Missile Range
AVT	Application Vertical Test
A-12	Echo A-12 Communications Satellite
CC&S	Central Computer & Sequencer
DAC	Douglas Aircraft Company
DSIF	Deep Space Instrumentation Facilities
EOGO	Eccentric Orbiting Geophysical Observatory
GAEC	Grumman Aircraft Engineering Corporation
GD/A	General Dynamics/Astronautics
GSFC	Goddard Space Flight Center
LMSC	Lockheed Missiles & Space Company
LOC	Launch Operations Center
LRC	Langley Research Center
MSC	Manned Spacecraft Center
Nimbus	Nimbus Meteorological Satellite
OAO	Orbiting Astronomical Observatory
OGO	Orbiting Geophysical Observatory
PFRT	Preliminary Flight Rating Test
PMR	Pacific Missile Range
POGO	Polar Orbiting Geophysical Observatory
SCTB	Santa Cruz Test Base
SSD	Air Force Space Systems Division
STL	Space Technology Laboratories
S-27	Swept Frequency, Topside Sounder
VAFB	Vandenberg Air Force Base

GEORGE C. MARSHALL SPACE FLIGHT CENTER

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MPR-A-63-1

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AGENA MONTHLY PROGRESS REPORT

for

December 1962

(U) SUMMARY

This report covers the activities during the month of December along with current status and future plans, and schedules relative to the Agena Launch Vehicle Programs. The programs are progressing in an orderly manner with only minor problems.

(C) PROGRAM STATUS

A. (U) GENERAL

1. On December 12, 1962, Dr. Wernher von Braun announced to M-L&M-A the Atlas/Thor/Agena Launch Vehicle Program would be transferred to the Lewis Research Center, Cleveland, Ohio. The transfer will be effected sometime after January 1, 1963.

2. A program status presentation by LMSC at Lewis Research Center has been scheduled for January 8, 1963. Personnel from NASA Headquarters, LMSC, MSFC, PMR, and AFSSD will attend.

3. On December 26, 1962, M-L&M-A was advised by Lewis Research Center, that approximately twelve people from that Center will arrive at MSFC on January 14, 1963, for Management Orientation and transfer processing of the Atlas/Thor/Agena Program.

B. (C) RANGER

1. (C) General

a. (C) The Ranger Program has officially slipped with no further firings prior to August, 1963. Present plans are three firings in 1963, and four in 1964. NASA Headquarters will issue more definite information early February, 1963.

b. (U) As a result of the slippage, LMSC has taken the following action:

(1) All manufacturing has been stopped on vehicles 6006 and 6007 and the vehicles have been placed in storage.

(2) Vehicles 6008 and 6009 will continue through bracketry installation and then be placed in storage.

c. (U) JPL has requested that a study of weight and performance improvements be made with objective of supporting an additional 50-100 pounds of payload on Ranger 6 and future Ranger spacecraft.

d. (U) Due to the present slip, JPL has requested incorporation of feasible changes, that time permits, to both the Atlas and Agena vehicles to increase reliability.

e. (U) Mr. H. M. Schurmeier has replaced Mr. Jim Burke as JPL Project Manager on the Ranger Program.



## 2. (U) Ranger 5

- a. RA-5 flight evaluation review was held on December 4, 62.
- b. The 35 day report, LMSC - 488617-05, has been received. Problem areas and present status is covered in the rpt.
- c. A review of RA-5 structural instrumentation was held on December 11, 1962.

## 3. (U) Ranger 7 &amp; 8

The match-mate tests for these vehicles have been postponed and have not been rescheduled.

## C. (U) MARINER-2

- s 1. On Dec 14, 1962, 1335 GMT, it was verified that the switch to Mode III did occur. As a result of this Command, all scientific experiments were set in motion. The closest approach to Venus occurred at 1959 GMT, Dec 14, 62, at a distance of 34,891, KM. At 2032 GMT a Mode II Command was sent which turned off Mode III scientific experiments.
2. Data received during encounter was termed as very good.
3. NASA issued 5 news releases, dated Dec 28, 62, giving information on the experiments. These were as follows:
  - a. MARINER measurements of the solar winds.
  - b. Preliminary results of MARINER 2 magnetometer experiments.
  - c. MARINER radiation experiments.
  - d. Radio tracking of MARINER 2 and its scientific implications.
  - e. Venus radar bounce experiment.

## D. (U) MARINER R-64

1. The restraints documents (JPL Spec. 31181) has been received and is being reviewed.
2. A fact finding meeting was held to discuss the work statement in preparation for contract negotiations. An errata will be published by LMSC making all discussed changes prior to

negotiations.

3. The contract negotiations, scheduled for week of January 7, 1963, has been postponed. A rescheduled date has not been set but will probably start during week of January 14, 1963.
4. LMSC has prepared a key interface schedule and this document is being reviewed.
5. Several meeting have been held at JPL and LMSC for discussions on detailed schedules and restraints document.
6. The Air Force has authorized LMSC to begin study effort in areas which will gain payload capability for this mission.

E. (U) EOGO

1. During the past month official information was received from GSFC that the spacecraft weight has increased from 1010 pounds to 1030 pounds. This is being studied to determine the effect on the vehicle. Goddard was requested to revise and reissue the restraints document for EOGO.
2. EOGO match mate operations are scheduled to start January 7, 1963, at Sunnyvale. MSFC representatives will witness these tests.

F. (U) OAO

1. An OAO interface meeting was held at Grumman Aircraft Engineering Company (GAEC) on December 5 and 6, 1962. Representatives from GAEC, GSFC, LMSC and MSFC were in attendance. Discussion involved electrical and thermal areas of effort. A detailed number of agreements were resolved, which will clarify and define the GAEC/GSFC requirements on MSFC for conducting the air conditioning test at Point Loma.
2. In the electrical area a specification was reviewed which will cover the electrical interface between GSFC/GAEC and LMSC/MSFC items.

G. (U) POGO

1. A work statement was issued to LMSC through SSD for initiating preliminary work on the POGO project. GSFC has been requested to prepare a POGO restraints document as soon as possible. Due to differences in the Agena B and Agena D, a new shroud ring must be designed for POGO.

## H. (C) A-12 (ECHO)

NASA Headquarters has rescheduled the A-12 mission launch date to June, 1963. This rescheduling action will allow additional time to correct spacecraft inflation problems and modification of launch pad at PMR for the Thrust Augmented Thor. The Agena vehicle (6301) was removed from system test and placed in storage.

## I. (U) NIMBUS

A meeting of Structure Systems Working Group was held at General Electric, Valley Forge, Pennsylvania on December 18, 1962. Representatives from DAC, GE, GSFC, LMSC, and MSFC were in attendance. At this time it appeared there may be an interference between the spacecraft and shroud dynamic envelopes. MSFC has requested GSFC and GE to run certain tests. Upon receipt of the data from GSFC/GE, LMSC will, through a computer program, combine the spacecraft shroud and vehicle data to determine the overall launch vehicle modes. Results of this analysis will permit the determination of interferences, their magnitude and locations if such exist.

## J. (U) PROJECT FIRE

1. Two meetings were attended during this report period by representatives of MSFC. The first meeting was a monitoring meeting at GD/A, to establish the status and progress of the System Integration Contract. It was resolved that GD/A upon direction by NASA/SSD would design, fabricate and install as either AGE or Facility modifications, all Fire Facility Modification requirements. LOC agreed with this approach based on the fact that all changes should be considered as stage peculiar.

2. The second meeting was held at AMR Complex 12, to discuss and resolve the Stage AGE and Facility Interface requirements and responsibilities. A detailed list was generated with actions being placed on each FIRE stage contractor. LOC and the 6555 AFTW, had representatives present during this meeting.

3. Additional funding was transmitted to AF/SSD to cover the Systems Integration Contract through the third quarter of FY-63.

4. The official FIRE Launch Schedule was received from NASA Headquarters. This schedule was transmitted to LRC and SSD for appropriate action.

## K. (U) GEMINI

### 1. General

The reprogramming exercise for the Gemini Target Vehicle has been completed and all programs are proceeding on schedule. Expenditures for FY-63 will total \$13.75 million as compared to the goal of \$10.3 million set by MSC. The total cost for the AF/129 LMSC contract is estimated at \$44.85 million, which is expected to be reduced during contract negotiations.

### 2. Communications & Command

A number of PCM Working Group meetings were held at AMR and at MSC to discuss the compatibility of the Target Vehicle C & C equipment, with that of the ground tracking and command stations. As a result, a \$7.0 million contract was awarded for the PCM phase of the ground station networks.

### 3. Guidance & Control

- a. Error analyses for the insertion into the parking orbit have been made. Discussions on the preparation of guidance equations have taken place. Some preliminary work on data flow diagrams has been performed. LMSC is working on some aspects of the Atlas/Agena reliability analysis. Extensive work in this area is being planned.
- b. Based upon results of a special study by LMSC, it was decided to retain the subsystem D timer for the ascent portion of the mission and switch over to the programmer following first burn cutoff.

### 4. Trajectories

Studies of optimum launch conditions are being conducted. These studies include; consideration of launch azimuth constraints, launch time constraints and Atlas/Agena launch sequence.

### 5. Propulsion

- a. A meeting was held at AEDC, Tullahoma, Tennessee, to formulate a high altitude test program for the PPS. The schedule of performance of these tests will be from March 4, 1963, to July 12, 1963. Test objectives will be the determination of nozzle extension durability and performance figures for minimum impulse and shut down transients.

- b. A PPS and SPS mock-up review will be held in mid-January, 1963 at BAC. At this time, the final development phases of the propulsion program will be initiated.

L. (U) UNIPAC

1. During the month of December, 1962, considerable sample testing of the Pyrotechnic Separation System was conducted at the Santa Cruz Test Base. The purpose of these tests was to verify the design of the pyrotechnic holding device, the thermal insulators, and the initiating device. The thermal tests indicated the shape charges can be maintained well below the 250 degree maximum design temperature.
2. The LMSC Rye Canyon Vacuum Chamber has been prepared for full scale separation tests. One preliminary separation test was run to check out the chamber and instrumentation system. Three full separation tests are scheduled for January 8, 11, & 15, 1963.

STATUS OF AGENA STUDIES

TITLE	INITIATED BY	EST COST	MSFC GO-AHEAD	CONTRACT DATE	PRELIM. REVIEW	STUDY COMPLETION	FINAL REPORT	REMARKS
AGENA PERFORMANCE IMPROVEMENT STUDY LMSC	MSFC	\$ 52,500	8-24-62	9-6-62	12-10-62	12-6-62	1-15-63	This is a performance study of various combinations of first stage boosters using the Agena second stage vehicle. Interim Report issued in mid-November. Study is 90% complete.
MARINER C INTER-FACE STUDY LMSC	JPL	30,000	8-16-62	8-62	10-11-62	11-62	12-10-62	Complete
UNIPAC SHROUD STUDY, Phase I	MSFC	165,000	9-28-62	10-29-62	10-30-62	12-10-62	1-28-62	This study is to determine if the UNIPAC concept is advantageous for NASA Agena use from a performance and reliability standpoint.
ATLAS/AGENA LAUNCH PROBABILITY STL	MSFC	70,000	10-1-62	10-1-62	N/A	1-63	1-63	Study is proceeding per contract schedule. Study Plan, first, and second Monthly Progress Reports have been received by MSFC. Final report is being prepared.
S-6 TIROS FEASIBILITY STUDY.	MSFC	14,000	11-7-62	11-12-62	11-15-62	12-1-62	12-7-62	Completed

# GEMINI PROGRAM VEHICLE SCHEDULE

	CY65												
	O	N	D	J	F	M	A	M	J	J	A	S	
5001													
5002													
5003													
5004													
5005													
5006													
5007													
5008													

NOV 1







## CONTRACT STATUS

1. The EOGO Definitive Contract was issued during December. This action definitized the EOGO portion of Letter Contract Supplemental Agreement 8, Contract AF-592.
2. The OAO Definitive Contract, AF-59, was negotiated and awarded during December. The contract was finalized for \$4,563,000. This did not include Reliability effort, human Engineering effort and possibly some Systems Contractor tasks which may be assigned to LMSC, after review of a plan now being prepared by LMSC. All the above will be negotiated separately after review and approval of the plans defining the effort required.
3. A fact finding meeting on the Mariner R-64 cost proposal was held on December 17, 18 and 20, 1962. The meeting on December 20 was held at Lockheed's Van Nuys plant to review the AGE portion of the proposal, which includes Agena D modifications to Launch Complex 12 at AMR.
4. The Gemini cost proposal for Phase I, was received during December and is now being reviewed by AFSSD and MSFC preparatory to initiation of negotiations.
5. The POGO cost proposal was also received during December and is being reviewed. A level of effort study was authorized for Lockheed to perform under Contract AF-592 prior to receipt of a definitive contract.
6. Level of effort studies were authorized for Mariner R-64 and Mariner C-64 during December; however, a Mariner C-64 work statement is being prepared before the effort on that mission can begin.
7. Negotiations on the AMR Launch Services Contract were initiated during December, but were not completed due to changes in the nature of the effort requiring cost proposal revisions.

CONTRACT STATUS  
DECEMBER 31, 62

PROCUREMENTS	REQUEST FOR PROPOSAL	LETTER CONTRACT	WORK STATEMENT		COST PROP. SUBMITTED	NEGOTIATION SCHEDULE	DEFINITIVE CONT. ISSUED
			ISSUED	AF REVIEW			
Mariner R (64)	7-16-62	N/A	8-31-62	1-21-63	10-23-62	1-21-63 to 1-31-63c	2-15-63
POGO	7-13-62	N/A	10-12-62	1-29-63	12-4-62	2-4-63 to 2-14-63	3-8-63
OAO (Lockheed)	N/A	AF-59 11-13-61	7-62	7-62	9-28-62	11-20-62 12-7-62	12-28-62
OAO (GD/A)	N/A	AF-47 11-11-61 4-21-62 AF-768 1-2-62	11-20-62	1-10-63	3-10-63	4-10-63 to 4-20-63	AF-240 5-1-63
GEMINI (PHASE I)	N/A	AF-129	8-13-62	9-6-62	12-5-62	1-14-63 to 1-18-63	3-1-63
GEMINI (PHASE II)	N/A	AF-129	1-18-63		2-15-63	3-10-63 to 3-19-63	5-1-63
EOGO	N/A	S.A.#8 AF-592 11-8-61	10-20-61	N/A	7-62	7-24-62 to 9-13-62	12-14-62
FIRE I	N/A	AF-189 10-62	6-62	9-11-62	11-19-62	2-11-63 to 2-15-63	2-28-63
AMR LCH SVCS	6-62	AF-198 10-62	6-62	9-62	9-28-62	12-4-62 to 1-29-63	2-28-63
MARINER C (64)	1-10-63	N/A	3-1-63	3-20-63	3-1-63	3-20-63 to 3-29-63	4-15-63
RANGER 10-14	1-15-63	N/A	1-15-63	4-1-63	3-1-63	4-1-63 to 4-10-63	5-25-63

## FACILITIES

## A. COMPLEX 12 MODIFICATIONS

1. The EOGO and OAO Gantry modifications now underway are scheduled to be completed February 2, 1963. The original work schedule required the contractor to perform the work in three increments. Now the work will be continued on a non-interrupted basis to completion.

2. Phase two of Complex 12 modification will involve structural strengthening of the gantry from Station 99 down. LOC will forward approximately \$40,000 to AFSSD facilities by January 20, 1963. This amount will be used to supplement the \$146,000 available for this work.

LOC will make available \$20,000 in late January, 1963, for phase three of the Complex 12 Modification Program. Phase three will include Gantry Transfer and Hurricane Tie-Down Systems.

3. Complex 12 Agena-B capabilities are being reviewed for conversion to the Agena-D program. It is estimated the minimum conversion time required will entail five seventy-hour work weeks. The present lead time, prior to modifications, is seven months. This requirement is based on the manufacture and installation of a new hydraulic package for the Agena-D GSE. Pre-negotiation activities are being conducted at this time.

## B. COMPLEX 13

Complex 13 is to be used for Mariner R-64 missions. The Agena and Mariner mission peculiar checkout equipment at the pad and blockhouse can be installed prior to the Mariner pre-launch activities. All work can be accomplished on a non-interference basis with other pad activities. Pre-contract negotiations are underway.

## C. COMPLEX 14

Complex 14 is being designed by M. H. Connell. The design is to accommodate the Atlas/Agena equipment in support of the Gemini Target Vehicle Launch. A facility design review will be held late January, 1963. Representatives from AFSSD, GD/A, NASA and LMSC will attend.



NASA AGENA LAUNCH SCHEDULE  
 APPROVED MISSIONS  
 NOT ON CONTRACT

MISSIONS	1963												1964												1965												APPROVED BY H. Pfeiffer	DATE 12/31/62
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D		
AMR																																						
Ranger 10*																																						
Mariner* R-3																																						
Mariner* R-4																																						
Ranger 11*																																						
Ranger 12*																																						
Ranger 13*																																						
Ranger 14*																																						
Mariner C-1																																						
Mariner C-2																																						
OAO-2																																						
OAO-3																																						
PMR																																						
POGO* S-50																																						
POGO* S-50a																																						
Nimbus 3 A-6																																						
Nimbus NOS-03																																						
Nimbus NOS-04																																						
Nimbus 4 A-7																																						
Nimbus NOS-05																																						

CONCURRENCE:

*[Signature]*  
 R. A. Maus

\*In process of being put on contract



NASA AGENA LAUNCH SCHEDULE

PROPOSED MISSIONS

MISSIONS	1964												1965												1966											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
AMR																																				
Adv Syncom 1																																				
FIRE 3																																				
EGO 3 S-59																																				
Adv Intermed Alt-1 Atlas																																				
FIRE 4																																				
Adv Syncom 2																																				
Adv Intermed Alt-2 Atlas																																				
Adv Syncom 3																																				
EGO 4 S-59a																																				
Adv Intermed Alt-3 Atlas																																				
Adv Syncom 4																																				
Solar Probe-1																																				
OSO S-67																																				
EGO 5 S-69																																				
Mariner Test																																				
Mariner Intrpl-1 Atlas																																				
Adv Met Sat-1																																				
OSO S-67a																																				
Mariner Intrpl-2 Atlas																																				
Solar Probe-2 Atlas																																				
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OAO-4 A-68a																																				
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POGO-3																																				
Electric Eng-1																																				
POGO-4																																				
Electric Eng-2																																				

CONCURRENCE:  
*[Signature]*  
 for H. Maus

PREPARED BY: H. Appeler  
 APPROVED: F. Clark  
 DATE: 12-31-64  
 DATE: 12-31-64

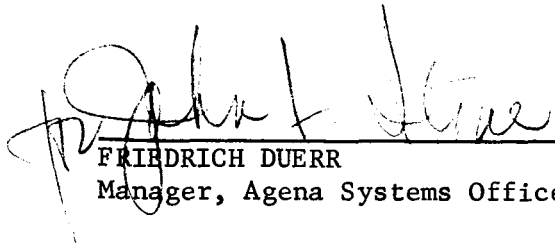
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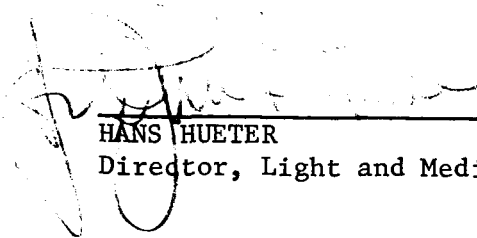
DECEMBER 1962

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FRIDRICH DUERR  
Manager, Agena Systems Office



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HANS HUETER  
Director, Light and Medium Vehicles Office

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