

NASA ROUTING SLIP

	CODE	NAME (if necessary)		ACTION
1.		<i>Shirley</i>		APPROVAL
				CONCURRENCE
			☒	FILE
2.				INFORMATION
				INVESTIGATE AND ADVISE
3.				NOTE AND FORWARD
				NOTE AND RETURN
4.				PER REQUEST
				RECOMMENDATION
5.				SEE ME
				SIGNATURE
6.				REPLY FOR SIGNATURE OF:
7.				

REMARKS:

Semini TK . Briefing notes
 Summary writeup

FROM:	CODE:	NAME: <i>JRF</i>	DATE: <i>10/18</i>
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DRAFT

7/7/66

Serial IX Debriefing 1000-1000 hrs. 4-20-277, June 10, 1966

Attendance: 40 off and on

Experiments:

S-5: (from Mr. Underwood while waiting for the session to begin.)

300 or more pictures were obtained on Gemini 9.

Peru was almost completely covered because it was CLEAR. A new lake(?) was seen on one picture which did not appear on any existing map. Peruvian Embassy was called and they sent a military plane to investigate this lake which could be a possible hazard to villages below by producing an avalanche.

Wa. Flaner, USGS, has put out a small technical paper on the GT-4 pictures.

S-12: Hemerway and Gene Flaherty. Micrometeorite Collection on Gemini, Agena.

S-10: The astronauts reported they could see the collection box. Sorry they could not go to it to open it. But there it was bright and shiny.

S-12: Biological analysis

(1) Swabs- taken both pre-flight and post-flight

Pre-flight were dirty

Post-flight " sterile.

3 locations inside the S/C

(2) 5 organisms tested

2 did not survive

2- penicillium and T-2(1) survive/ bacteriophages

The biological results are easier to get at and so the results will come out earlier.

Micrometeorite collection had 18hrs. with two exposures-two openings and closings of the box from the panel and final recovery by EVA.

The S/C was in drifting flight, looking in all directions, but actually not so much yaw as pitch to quote the astronauts.

Some artifacts were present -how made is beyond our understanding.

"You've done for us a really fine job."

Astronauts-

No problem in recovering S-12. Had to pull it off, but it didn't stick.

Didn't use lanyard (meaning?) We heard the squib when it closed.

We were quiet one day and didn't fire the thrusters.

Zeitler has the times of opening and closing the control box which were called down from the S/C

Hemerway to astronauts: Can you tell me about ~~the~~ any discarding of material?

Astronauts- At end of first day we had used 80% of fuel(600%).

We ~~had~~ purged the fuel cells and had a urine pump which gave ~~an~~ balls

- During EVA I noticed that the S/C was clean

Stafford says estimate was that for 30 mins it was absolutely clean.
in?

* Stafford- Saw meteors looking down at the earth

We saw a very bright meteor- way, way out (going) from left to right, whitish-green in color.

Material was dumped between exposures-- mass of water and urine- we know the mass to barely an ounce--

Hemenway- To assume that all the holes are real- we count 9 holes in 5 sq. cm. in 7×10^4 secs with no corrections..this gives a point on the curve (see file) in the middle of many other results. Serious difference with Pegasus.

Stafford- Is the pressure suit we have adequate?

Hemenway- the velocities range from 0 to 70 km/sec; those recorded hits probably were not very high.

Dubin- (this) is a portion of sample we've looked at, the scanning process is slow.. would like to investigate the gold visor--gold is soft.. Luminous particles... at sunrise on blunt end (S/C) they always show at sunrise.

Roach- Could they cause what S-12 sees?

Hemenway- Stains show when we open the collection box. Much more was collected (guest investigator portions) and we are worried about contamination between these separate portions.

Stafford- At one time there was an N_2O_4 yellow drop right on my window..

Go to p.3.

Hemenway- About S-10, we feel it is very important todo this because of the length of exposure. Agena 8 would really be worthwhile to get at-

S-1 Zodiacal Light, Ney and Huch and John Lintott (tech. monitor)
Astronauts to Ney- We have a message- we did the expt inside...
Ney to astronauts- How did you hold (guide) it so well?

Ciernan- We felt there would be a problem in holding 30 secs. in EVA.
I had practiced leaning on a car and 30 secs. was too much!
During EVA - drifting so much..
During EVA just maintaining position is our most difficult task...
restraining the feet.

Stafford- Gene produced so~~m~~ much torque when he stepped out of the S/C,
that he rolled me 150 degrees, etc...
I don't think we could do it (the expt) outside..

Ciernan- We turned out all the lights except 3 red lights inside the S/C.

I put the camera again the(?) and slid it against the frame so
I could hold it hard against the frame and then Tom went for the
(proper) part of the horizon..
The pitch was difficult- to sight the horizon over the (nose)
and vertically to get the Milky Way on the window. ✓

* We saw a very bright meteor, way, way out (going) from left to right,
whitish-green in color.
Material was dumped between exposures- mass of water and urine-
we know the volume (mass) to be only an ounce

We took 18 pix, Moon on the last one; then sunrise..

17 were good..

The first picture was taken toward the north.

X Ney- Would you like a sight? Would give finite--
15 secs, 30 secs in center
(Your) worst holds only represent 1 or 2 degrees...are the null rates for
orbital or inertial?

How well did you think you held??? and then I'll show you the pictures..

Ciernan- Didn't need a handle on the camera- it's on right and down. I feel camera
was held real well. Problem was rates were even harder than in S-11..

Ciernan- It was still difficult to line up the camera with the black horizon,
etc. I concentrated on looking in the right direction. (0.8 deg.
in each direction.)

Problem- the window is at an odd angle

Ciernan- I cleaned my window-
mine had clear area in center but ridge all around-

Stafford- I couldn't even see ...

Ciernan- A world of stars when put out all the lights--

There is a light leak inside the capsule from the attitude control..

* Lights were out in the room to see the pictures and it is difficult to read the
They saw the zodiacal light visually notes

Day after full moon..

Lightning?

Magellanic clouds? (I think the ans. was no.)

Stafford- When the sun goes down, you see the lightning everywhere.

Ciernan- the top edge of the airglow is sharper (than the lower edge)

Pictures #9,12 were shown.

Camera was turned off between each exposure

Twilight and zodiacal light in the sunrise photos (Venus) ...like Gordo Cooper's
description of visual view.

Roach- Could you hold on a bright star?

Stafford- If could use a reticle and a boresight, could really be on the needle.

Ney- Should we never think of a 2 minute exposure?

Ciernan- 30 secs seems a long time.

Ney- Voice tape? Are time hacks on each? Ans/ NO.

Zeitler- I didn't see anything on that.

Ciernan: Maintaining position was a major problem.

Ney: How to do it outside?

Stafford: Mount camera clamped to forward hatch.

(Did you see the ATDA?)

The ATDA was 20 mins. away, about 10x diam. of Venus....never saw any flashing
lights.

Roach: Did you ever see "sparkles" coming of the ATDA?

Stafford: No, none..

Whitish-blue and then whitish-orange..(?)

John Lintott: a boresight would cut down the field of view..

Ney: the velero was a night light trap..

and he ended his remarks with "It was a great job!"

Ciernan: We'd like some pictures..

Ney: We'll get you some..

* * * * *

S-11: Martin Koomen, NRL

Koomen: "After hearing the voice tape, I wasn't sure whether to come without my hard hat!"

Ciernan: We haven't heard them yet..
How good were the rates?

Koomen: I thought they were very good.

Ciernan: the points about boresighting would be the same as for S-1.

Stafford: The platform was up all the time..

Ciernan: the sight would give you more control

C: lost..

S: lost..

Ciernan: We took the "timer" off as it wasn't working..used time hacks..

Stafford: It was a very difficult operation and (he) was in a terrible position..

--our hands were cramped and sweaty afterwards(from the effort)..

Koomen: the control was too coarse?

Ciernan: Make lever arm as short as possible on the pitch control..
Hard to get in these positions in zero G.

Koomen: You were holding on to what you were supposed to guide..

Ciernan: No finger prints because of way things were handled..

Koomen: Was bracket on the window from orbit to orbit?

Ciernan: Yes took it off prior to EVA..
Didn't get the last 2 pictures because the camera was stowed before S-1 and they...

Koomen- (on some pictures) the airglow is sometimes sharper than other times. There are 35 good pictures; the thruster frame is black.

Ciernan- Does the bright moon help the airglow?

Koomen- We don't think the moon affects the airglow at all.
- There is evidence of differences in intensity and altitude using (comparing) the two filters.

Stafford- Dr. Ney's experiment (is) learning curve for 3-11.

- lightning flashes

Koomen- Last 4 pictures/ 2 extra sets of exposures, 5 and 10 secs. with filters

Stafford- Decision not to go
We had 6 (numbers) of frame(panel?) left

Ciernan- Just 2 dots were what you need, not 3 (on camera or panel or what?)

Koomen- Could you adjust brightness of points?

Ciernan- Not as fine as I'd like-- I'd like to go dimmer..

Koomen- Did you use ring on shaft?

Ciernan- Yes, with my fingernail..

Koomen- Were you pressed for time?

Ciernan- As a matter of fact we had time to wait for sunrise..
- It was slower because we were saving fuel.

Stafford- Bore sight would reduce time by 25%.

Koomen- Was the estimate to take the twilight pictures ok?

Ciernan- We took what you gave, and apparently they were..

Koomen- Would it be better just to use your own judgment?

Ciernan- No, I was glad to have the times..

- We were glad to have the time so we knew what to shoot at..

Koomen- Did you see and color in the twilight airglow

Ciernan- No, just grey or NO COLOR.
- I would use milky to describe the appearance.

(Koomen showed slides of many of his pictures which were very good.)

Koomen- No filter and minus No filter show somewhat different levels

Lintott- What about boresighting?

Ciernan- Yes, it could bring yaw on

Discussion on SO11 was folloed by a film showing (Quick Look at Gemini IX).
15 mins.

UHF-VHF Polarization experiment:
51/2 orbits of data.

11:40 A.M. M-5 Bioassays of
Biomedicals Analysis of Body Fluids.

GENERAL SCIENTIFIC OBSERVATIONS

11:45 A.M.

Ney: Any stars in the daytime?

: No

Stafford: In twilight as we crossed the sun line, (saw) Antares.

Ciernan: Sunrise on the adapter and on the nose are quite different for
the two of us (two different windows, two different views).

: He could see stars while I was in daylight

Stafford: (Schitra saw) 3 stars in Orion's Belt during Gemini VI, and
Sirius and Rigel.

Lowman: 50 or 60 useful pictures of S. America; only had a few before.

Ciernan: Could only see streams flickering through (the jungle?)
Very dark above the rain forest.
"Greens," no.. Black tempered with green.

Lowman: Any blues off the NW coast of S. America?

Stafford: C n't answer.

Ciernan: Hasselblad with filter..

Stafford: Maurer (camera)..

Did not have the GT-10 (terrain photography) flight plan, no onboard
data (to direct this picture taking).

: Maurer worked well, better than the Hasselblad. A strip over Africa
was taken.

Dunkelman: Use faster speed, 1/500th sec...why not try?
Towering decks of clouds..

MSC ques. re STRAPS

Ciernan: I'm against straps, lanyards and tethers..
If have to get up, you will need restraint because your feet will
start floating...

Ciernan: Couldn't see out my window obliquely..

Stafford: Window covers did help some (protected onlaunch and jettisoned in flight did help cleanliness of windows).

Roach: You did see the zodiacal light several times? How close to the Sun?

Ciernan: No chance to look for these phenomena as such because we had to sleep or look for ATDA.

Underwood
Color PICTURES: Some good limb shots.. (~~XXXXXXXX~~)

Dubin: Moon?

Ney: Could you occult the moon behind the ATDA?

Roach: Could wash out stars with the moon..

Underwood: ATDA and moon in some pictures..

Ciernan: I had a plan to observe a number of things, but when the time came (during EVA) I was so fogged up that I couldn't proceed (with the plan.)

Roach: It is important to find out whether the problem is with stuff "in space" or whether it is on the window..

Stafford: It's my impression that it's something outside..

Ney: Was sun ever occulted by the ATDA?

Stafford: WE didn't stay with it too long..

Ciernan: WE closed hatch while outside (during EVA).

Ney: Did you see stars as well then (Sun visible to Ciernan) as at night?

Stafford: As black then as ..

Ney: Earthlight might cause the problem..
We are trying to distinguish between
1. Daytime with earthlight
2. Daytime without earthlight
3. Nighttime

Dunkelman: We need to understand each other and for others to understand what we mean. We need to clarify what is meant by "local daytime."
(question often of semantics..)

Roach: Will you see stars on the moon trip?

Stafford: (When) black I saw 5th or 6th magnitude stars
Sun was 2 or 3 degrees above the horizon.

Roach: Open the hatch and look out (so get rid of window problem).

Stafford: I could not see through Gene's hatch (when he emerged for EVA)
E N D of this section/ Lunch.

NASA ROUTING SLIP

	CODE	NAME (if necessary)	
			ACTION
			APPROVAL
			CONCURRENCE
1.		Gemin. IX	☒ FILE
2.		file	INFORMATION
3.			INVESTIGATE AND ADVISE
4.			NOTE AND FORWARD
5.			NOTE AND RETURN
6.			PER REQUEST
7.			RECOMMENDATION
			SEE ME
			SIGNATURE
			REPLY FOR SIGNATURE OF:

REMARKS:

1. AGENDA for Dr. Newell Briefing
2.

FROM:	CODE:	NAME: JRP	DATE: 7/12/66
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AWD0038-H0B456

PP NASAHQ NASGFC

DE HQMSC 003 1601458

ZNR UUUUU

P 081538Z ZEX

FM NASA MSC HOUSTON TEXAS

TO NASAHQ/NASA W O ARMSTRONG CODE MB WASH DC

NASAHQ/NASA R O ALLER CODE MGO WASH DC

NASAHQ/NASA N P FRANDSEN CODE MGS WASH DC

NASAHQ/NASA COL J ROLLERUD CODE NM WASH DC

NASAHQ/NASA J R GILL CODE SM WASH DC

NASAHQ/NASA H J SMITH CODE SG WASH DC

NASAHQ/NASA M DUBIN CODE SG WASH DC

NASAHQ/NASA M TEPPER CODE SAD WASH DC

NASGFC/GSFC P D LOWMAN CODE 641 GREENBELT MD

NASGFC/GSFC L DUNKLEMAN CODE 613 GREENBELT MD

NASA

BT

UNCLAS CF322-T25-88.

THE SCIENTIFIC DEBRIEFING FOR GEMINI IX WILL BE HELD ON

JUNE 16 CMM 1966 CMM STARTING AT 8.30 A.M. CST AT MSC-HOUSTON CMM

BUILDING 4 CMM ROOM 277. ALL PARTICIPANTS ARE REQUESTED TO BE AT THE

MEETING AT 8.30 A.M. CST TO PRECLUDE REPETITION OF THE QUESTIONS TO THE CREW.

THE SCHEDULE FOR THE DAY WILL BE AS FOLLOWS-

8.30 A.M. - 9.30 A.M. - B-10 AGENA MICROMETEORITE COLLECTION

B-12 MICROMETEORITE COLLECTION

9.30 A.M. - 10.30 A.M. - B-1 ZODIACAL LIGHT PHOTOGRAPHY

PAGE 2 RUWGH0 003 UNCLAS

B-11 AIRGLOW HORIZON PHOTOGRAPHY

D-14 UHF-VHF POLARIZATION

10.30 A.M. - 11.00 A.M. - M-5 BIOMEDICAL ANALYSIS OF BODY FLUIDS

11.00 A.M. - 12.00 M. - GENERAL SCIENTIFIC OBSERVATIONS

12.00 M. - 1.00 P.M. - LUNCH

1.00 P.M. - 3.00 P.M. - D-12 ASTRONAUT MANEUVERING UNIT

ANY QUESTIONS AND/OR REPLIES SHOULD BE DIRECTED TO JOHN W. MCKEE CMM
TELEPHONE MU 3-3291 (AREA CODE 713).

SGD DONALD K SLAYTON DIRECTOR FOR FLIGHT CREW OPERATIONS.

BT

NNNN00039-

YOWEL 2
Please see that Don Gilt
knows about
this - things
PattRB

NASA Communications Sec.	
Code BAO-3	
TO: <i>SPM</i>	
☒ FOR ACTION	☐ FOR INFORMATION
ACTION COPY TO	
INFORMATION COPY TO	

7/6/66

Memorandum to the File

From: J. R. Gill

Subject: Experiments Debriefing of Gemini IX held in Bldg. 4, MSC at
8:30 A.M. June 16, 1966.

Gemini IX's performance on the OSSA experiments was impressive. The guiding performed for S011 and S001 was the best that has yet been done on a manned spacecraft. In all 40 usable pictures of the airglow were made with the 2-filter (split field) arrangement attached to the wide angle Maurer lens (NRL's experiment).

S01: was done inside the capsule since it was not possible to attempt it during the EVA. They got pictures of the zodiacal light and the Milky Way and the guiding was good even for the 30 sec sweeps. On Tri-X these are the best pictures yet of the zodiacal light surpassing the results achieved on Gemini V.

S011: About 40 usable pictures of the airglow were obtained. These contain some of the same star fields pictured in S001. Guiding was very good even though Cernan had to do the experiment from a very awkward position.

S012: Hemenway showed several pictures which were enlargements (up to 35,000 times). Only a small portion of the ^{exposed} surface has been analyzed, but on this portion 9 impacts are recorded. Hemenway is investigating possible "contamination between experiments before sending the individual sections to guest investigators. On the biological experiments where the results come out faster (a) 3 swabs taken inside the S/C pre-flight were dirty; post-flight these same areas were sterile. (b) the T-4 bacteriophages and the penicillium specimens

survived the spaceflight; two other specimens. The 30-day report on this experiment will contain more results, but the full micrometeorite analysis will take some time.

S-5 and S-6: These experiments were not officially carried, but nonetheless it was done as "operational procedure." In all some 300 color pictures were taken with the Hasselblad and Maurer cameras both of which were carried (for the first time. The Maurer is eventually planned to replace the Hasselblad, but this has been slow in evolution.) A strip was taken over Peru where the weather happened to be excellent. Features show up in these pictures which do not appear on any existing map; for example, a glacial lake in the Andes, which do not appear on any existing maps. The Peruvian Embassy has been informed of this lake which may portend an avalanche hazard for villages/located below, The Peruvians have sent a military plane into the area to investigate. This indicates the possible current use of such pictorial information.

The AMU exercise was unsuccessful. It proved to be too much "work" under the present arrangements. It takes two hands just to control the body positioning. Hand-held photography during EVA for experiments looks "out of the question" at present.

Jocelyn R. Gill

7/6/66

m
Memorandum to the File

1. The purpose of this memorandum is to provide information regarding the proposed changes to the existing regulations governing the conduct of business transactions between the Government and private citizens. The proposed changes are intended to streamline the process and reduce the burden on both parties.

2. The proposed changes are as follows:

- a. The requirement for a written contract for all transactions exceeding \$10,000.
- b. The requirement for a written contract for all transactions involving the sale of real property.
- c. The requirement for a written contract for all transactions involving the purchase of goods or services.
- d. The requirement for a written contract for all transactions involving the lease of property.
- e. The requirement for a written contract for all transactions involving the sale of securities.
- f. The requirement for a written contract for all transactions involving the purchase of securities.
- g. The requirement for a written contract for all transactions involving the lease of securities.
- h. The requirement for a written contract for all transactions involving the sale of intellectual property.
- i. The requirement for a written contract for all transactions involving the purchase of intellectual property.
- j. The requirement for a written contract for all transactions involving the lease of intellectual property.

3. The proposed changes are intended to ensure that all transactions are properly documented and that the Government is able to enforce the terms of the contract. The proposed changes are also intended to ensure that the private citizen is able to enforce the terms of the contract.

4. The proposed changes are intended to be effective on July 1, 1967.

5. The proposed changes are intended to be applied to all transactions entered into on or after July 1, 1967.

6. The proposed changes are intended to be applied to all transactions entered into by the Government and private citizens.

7. The proposed changes are intended to be applied to all transactions entered into by the Government and private citizens.

8. The proposed changes are intended to be applied to all transactions entered into by the Government and private citizens.

9. The proposed changes are intended to be applied to all transactions entered into by the Government and private citizens.

10. The proposed changes are intended to be applied to all transactions entered into by the Government and private citizens.

File Gemini TX.

7/12/66

Landell's Conf. Rm.
9:30 A.M.

(AGENDA) Briefing for Dr. Newell: Astronaut Activities
Stability of S/C (EVA)
Neil Armstrong - why not twenty window?
Scattered light & Astronomy

Astronauts as Scientific investigators
tone at debriefing
" " Morehead

Paradox of TX: Gemini Science Plan.

N.B.

Dr. Newell will plan to attend an astronaut's
experiments debriefing as soon as possible. Probably
can't attend Gemini X.

Newell

1. T017/5010 what state? (ATM)
TWX film to Newell

2. Stars in daytime
night time x 20157

Need Gen. mid-Prop. Conference Task
2 acts. in Gemini Mid-Prop. Conf.

a. Geo-nation acts. 2a-1
Intro. & Summary - accomplish on Mercury
done on Gemini
(not accomplished on Mercury)

b. Dim Light Photography 2b

312, S1, S-10, S-11,
Apone & ATDA

Experiment Schedule on IX: S1, S10, S11, S12

3. Experiments on X: S1, S5, S6, S10, S12, S13, S26

4. " " XI: S4, (S-5, S-6), S9, S11, S13, S26,

5. XII: S3, S5, S6, ~~S7~~, S11, S13, S29, S30
(AMV) S28(?), S-29.

IX: 4

XI: 7 + 2 op.

X: 7

XII: 6 + S28 (?)

UNITED STATES GOVERNMENT

Memorandum

TO : SM/Director *WBS*
Manned Flight Experiments Office

DATE: June 21, 1966

FROM : SM/Jocelyn R. Gill

SUBJECT: Report on Gemini 9 - STAFFORD & CERNAN

Performance
Gemini 9 - ~~Perfection~~ on our experiments was impressive.

S-1 - Zodiacal Light Experiment (^{eye}Nye) - This was done inside the capsule. Pictures were taken of the zodiacal light and the Milky Way. Guiding was quite good even for the 30 second sweep. Tri-x film was used, and best pictures yet of the zodiacal light.

S-11 - Airglow Horizon Photographic Experiment (Kooman) - Naval Research Laboratory - About 40 usable pictures of the airglow with a split field picture were obtained. Some of the same star field were shown in S-1. Guiding was very good even though Cernan had to take pictures in a very awkward position.

S-12 - Micrometeorite Collection (Hemenway) - Showed several pictures which were greatly magnified - enlargement of the micrometeorite experiment. Only a small portion of the exposed surface has been analyzed. Nevertheless 9 important ones are recorded on these films. Hemenway is investigating possible contamination between experiments before sending individual portions to guest experimenters.

Biological Experiments - Results of these come out faster.

Part A: 3 swabs were taken inside of spacecraft.

Preflight were dirty.

Postflight: Some areas were sterile.

Part B: Penicillium and T-4 bactericidal specimens survived the spaceflight. Two other specimens did not. 30 day report may have more results but micrometeorite experiment will take some time.



S-5 & S-6 - These were not officially carried, but Stafford and Cernan took over 300 colored pictures using the Hasselblad and Maurer camera. A photographic strip was taken over Peru where weather was excellent. Some features show up, for example, glacial lake in the Andes which do not show on any existing map. Peruvian embassy has been informed of this lake which may portend for avalanch hazard to villages located below this lake. Military plane was sent into area to investigate.

AMU - This was unsuccessful. Proves to be "too much work" under present arrangements during EVA. It takes two hands to control the body positioning. Hand held photography during EVA for experiment looks out of the question at present time.

Jocelyn R. Gill



U. S. NAVAL RESEARCH LABORATORY
WASHINGTON, D. C. 20390

File 5009
Gemini Expt.

IN REPLY REFER TO

Code 7020

21 June 1966

Dr. Homer E. Newell
Associate Administrator
Space Science and Applications
National Aeronautics and Space Administration
Washington, D. C. 20546

Dear Homer:

First, in behalf of the NRL-GSFC collaborators in Gemini Experiment S-9, I want to express deep gratification at the strong interest in and concern for the success of our experiment shown by you and by Dr. George Mueller. The substantial help that both of you and your associates in NASA have given us is much appreciated.

The proposal to include two high-altitude orbits in the flight plan for Gemini mission XI has been carefully examined by physicists at MSC, Houston, as well as by our joint NRL-Goddard group. At a meeting in my office yesterday with officials from NASA Headquarters and from MSC, Houston, we agreed that the S-9 experiment would not be hurt if the flight plan included two elliptic orbits having an altitude of 750 nautical miles at apogee (approximately over Australia) during the 26th and 27th orbits. Our emulsion stack apparatus would be retrieved from the retroadapter section during the first EVA, and stored inside the Gemini capsule in a manner suggested by Messrs. Joseph Lill and Peter Higgins of MSC, with an orientation that would minimize the effects of background radiation incident on the window face of the package. In short, we believe that the proposed high-altitude orbits are compatible with the S-9 experiment.

May I digress to say that we in the NRL group are looking forward to favorable consideration by the Manned Space Flight Experiments Board of our recent Apollo proposals for cosmic-ray studies outside the magnetosphere, and for observations of cosmic γ -rays in earth-orbiting Apollo vehicles.

With warm regards,

Sincerely,

Maurice

Maurice M. Shapiro, Chief Scientist
Laboratory for Cosmic Ray Physics
(Principal Investigator, S-9)

MMS/dac

P. S. A list of those attending the meeting in my office yesterday is attached. In an earlier meeting several weeks ago, we benefited from participation by Astronauts Charles Conrad and William Anders.

cc: Dr. George Mueller
Mr. Leroy Day

*The enclosed
news item may be of
interest*

*SM/11 JULY
5/28 JUNE
SD/24 JUNE
eg-55*

In attendance at meeting in Dr. Shapiro's office
U. S. Naval Research Laboratory

20 June 1966

NASA Headquarters, Washington

Eldon W. Hall
Vearl N. Huff

MSC, Houston

Wyendell B. Evans
Joseph C. Lill
Peter W. Higgins

GSFC, Greenbelt

Carl E. Fichtel
Donald V. Reames

U.S. NRL

Maurice M. Shapiro
Bertram Stiller
Francis W. O'Dell
Rein Silberberg
Chen-Hsiang Tsao

NRL LABSTRACTS

No. 23

U. S. NAVAL RESEARCH LABORATORY, WASHINGTON, D.C. June 10, 1966

USRL Joins NRL

Effective July 1 the Navy Underwater Sound Reference Laboratory (USRL) in Orlando, Florida, will be disestablished and become a division of NRL. It will be designated as the Underwater Sound Reference Division (USRD). As a division of NRL, USRD, in its program of standards and instrumentation development for underwater sound measurement, will be re-enforced by the specialized capabilities of related elements of the NRL research staff. The financial, management, and support services requirements will be backed up by the service organizations of NRL.

The new division will continue under the immediate supervision of the Chief Scientist, Mr. O. M. Owsley. Mr. Owsley will report directly to Capt T. B. Owen, Director of NRL, for the management of the operations and the effective prosecution of the program. He will be guided as appropriate and in their respective areas, by NRL's Director of Research, Director of Support Services, and Comptroller.

continued - page 2

NRL Signs Labor Contract for Guard Unit

The U.S. Naval Research Laboratory and Columbia Lodge No. 174 of the International Association of Machinists and Aerospace Workers have negotiated a comprehensive agreement covering all non-supervisory security guards in the Laboratory's Security and Administrative Services Division.

Following a grant of exclusive recognition to the Union on January 19, 1966, negotiations began on March 31, 1966, and were concluded on May 26. The Laboratory's negotiating team was headed by Capt J. C. Matheson, Director of Support Services, and included LCdr J. H. DalPian, Security and Administrative Services Officer, and Mr. T. F. Garnett, Jr., of the Personnel Division. The chief negotiator for the Union was Mr. R. W. Fauntleroy, Business Representative of Columbia Lodge No. 174. Mr. Fauntleroy was assisted by Mr. R. E. Bunner and Mr. H. B. Brooks, both members of the Laboratory's guard force.

The completed agreement was signed at 3:00 p.m. on Wednesday, June 1, in the Office of the Director of Support Services. The effective date of the agreement is June 2, 1966. It is anticipated that the agreement will remain in effect for one year with the possibility of its subsequent extension

continued - page 2

Chair of Cosmic Ray Physics Established



Effective May 11 the Laboratory established a Chair of Cosmic Ray Physics for Dr. Maurice M. Shapiro, who recently resigned from the Superintendency of the Nucleonics Division after 12 years in the latter position. The post of Chair of Science was created by the Laboratory to confer special recognition on the incumbent as a distinguished scientist of exceptional accomplishment.

The staff of the former Cosmic Ray Branch, which Dr. Shapiro organized and led since 1949, will constitute the Laboratory for Cosmic Ray Physics, with Dr. Shapiro as Chief Scientist.

The Laboratory for Cosmic Ray Physics is engaged in studies of the primary cosmic radiation—its composition, energy spectra, and other properties. This group of physicists composing the Laboratory has become especially well-known for its significant contributions to our knowledge of the helium component and the heavier primary nuclei of the cosmic radiation, as well as for its earlier work on elementary particles. Dr. Shapiro is also Principal Investigator for the Gemini Cosmic Ray Experiment S-9, a collaborative enterprise of the Laboratory and the Goddard Space Flight Center. The emulsion stack designed for this experiment was lost on the ill-fated Gemini VIII but, the experiment is re-scheduled to be flown on Gemini Flight XI.

Savings Bond Campaign Extended

The Federal Savings Bonds Chairman, Postmaster General Lawrence F. O'Brien, has announced that he is extending the 25th Anniversary Savings Bonds Campaign for Federal Employees through

continued - page 2

USRL - continued

As a part of NRL, the new division's work will remain essentially unchanged. Its mission, now incorporated into the mission of NRL, is to conduct research and development furthering the science of underwater sound measurement, to provide to other naval activities the resulting scientific knowledge, new or improved techniques, and standardized instrumentation, and to provide facilities and services for the accurate calibration of standard instrumentation and the unbiased determination of performance characteristics of development, prototype, or operational underwater sound devices used by the Naval Establishment.

Several of NRL's key personnel, including Capt T. B. Owen, the Director, and Dr. C. E. Cleeton, the Associate Director of Research for Electronics, have visited the facility to arrange for the transition.

The 10.5 acres of Laboratory ground occupied by USRD are located alongside Lake Gem Mary, one mile south of the city limits of Orlando. It has a personnel complement of 98 people: 97 civilian and 1 military.

The Laboratory extends a hearty "Welcome Aboard" to its new staff members and looks forward to publication of articles about the new division.

CONTRACT SIGNED - continued

for one additional year. Significant provisions concerning promotion, scheduling of annual leave, hours of work, and a grievance procedure with provisions for advisory arbitration, are among the seventeen articles included in the agreement.

This is the second agreement covering Laboratory employees negotiated within the framework of the Federal Employee-Management Cooperation Program as set forth in Executive Order 10988. The first agreement, covering all ungraded non-supervisory employees at the Washington complex of NRL, became effective on December 21, 1964. Re-negotiation of the latter agreement is expected to begin in the early fall of this year.

SAVINGS BOND CAMPAIGN - continued

June. He said that the additional month is needed to assure that every civilian and military employee of the Federal Government throughout the world is given an opportunity to sign up for regular purchases of Savings Bonds through the Payroll Savings Plan.

The Postmaster General expressed confidence that the campaign goal of 75 percent participation by Federal employees will be achieved.

So far in NRL's Savings Bond Campaign 94 people have increased their Bond allotments, and 157 people have signed up for Bond deductions, making a total of 1,628 Bond savers. The Laboratory's percentage of participation is now over 50.

This extra month affords you the excellent opportunity of signing up for Bonds. Why not jump on the "Bond Wagon" today?

Elected Fellow of the American Academy of Arts and Sciences



Dr. Richard Tousey, Head of the Rocket Spectroscopy Branch, Atmosphere and Astrophysics Division, was elected a Fellow of the American Academy of Arts and Sciences at the Academy's 186th Annual Meeting held May 11 in Boston, Mass.

The American Academy of Arts and Sciences, was founded in Boston in 1780 by John Adams and other revolutionary leaders of the Massachusetts Bay Colony. Among the prominent members of the past have been George Washington, Oliver Wendell Holmes, Horace Mann, Sir Winston Churchill, and John F. Kennedy.

Dr. Tousey, who is a member of over a dozen major scientific and professional societies, is now a Fellow in four of them. Previously he had been elected Fellow by the American Physical Society, the Optical Society of America, and the American Geophysical Union. Moreover, Dr. Tousey's work here has earned him numerous special honors and awards, including the Navy Award for Distinguished Achievement in Science (1963), the Henry Draper Medal of the National Academy of Sciences (1963), and the Frederic Ives Medal of the Optical Society of America (1960).

Scrap Material Wasn't Scrapped

The following items were evidently mistaken for scrap material and were picked up in Building 49. The equipment should be returned so that formal transfer procedures may be followed.

- Pulse Generator, H.P. Mod. 212A, Ser. 549, P.A. 243091
- Pulse Generator, H.P. Mod. 212A, Ser. 4496, P.A. 248572
- Flow Meter, Burton, Mod. 200, Ser. 200-6069, P.A. 245683

NASA ROUTING SLIP

	CODE	NAME (if necessary)	ACTION
			APPROVAL
1.		<i>Shirley</i>	CONCURRENCE
			FILE
2.			INFORMATION
			INVESTIGATE AND ADVISE
3.			NOTE AND FORWARD
			NOTE AND RETURN
4.			PER REQUEST
			RECOMMENDATION
5.			SEE ME
			SIGNATURE
6.			REPLY FOR SIGNATURE OF:
7.			

REMARKS:

See working file on
 Gemini IX file: did I
 write a Gemini IX Defining
 Memo? (similar to the
 Gemini XI one). If so,
 attach to this & I'll see whether
 I should destroy or file these
 notes

FROM:	CODE:	NAME: <i>JRF</i>	DATE: <i>4/5/66</i>
-------	-------	------------------	---------------------

Grinn 9 briefing
about 40 people present

MSC Bldg 4 Rm 277
June 16, 1966

55 300+ pictures in Grinn 9
Room almost completely covered because it was
Scappati CLEAR weather. A new lake (?), avalanche discovered
on one picture, called Permian embassy & they sent a
military plane to investigate this lake which was not on
any of the maps.

W^h Fisher USGS (Bogley) Small technical papers on the
ST-4 pictures

Hernandez & Gene Flaherty
Roman

J-10 cd see it; Sorry cd not do
documentary end on light & shiny

J-12:-

Biological analysis

① Swatz - pre-flight & post-flight / pictures
(plenty) (Sferite) & negative

location of snake:-

② Stryker's tested:

2 - no penicillin

2 Penicillin & T-1 bacteriophage
Injected

2

Being results easy to get at.
18 hrs. was a great help on the micrometre
micrometre pictures! -

②
Drifting ~~photo~~ - looked in all directions
not as much you as pitch
predominant
one revolves.

artifacts - have made beyond our understanding.
you've done for us a really
No problem in recovering 5-12. Had to pull it off
but it didn't stick! Didn't use lanyard. I just
didn't

We had the squirt when it closed.
We were quiet one day & didn't fire thrust.

Times of opening & closing called down (Zentler Lee).

Can you tell me about any discolored material?

End of 1st day we had use 80% of fuel (600 #)
large fuel cells & mine dump - snowballs

During EVA S/C was clean

Stafford says est. 30 mins. absolutely clean

* S: - Saw meters looking down at Ⓢ.

very bright meteor - way, way out, left to right
whitish-yellow color

material dropped bet. exposures -

Mass of water & mine - Can know to half
an ounce.

Heur - To assume that all holes are real, we count
9 holes in 5 sq cm in 7×10^4 sec with no
corrections you get on the curve in the middle.
Serious difference with Pegasus

S- Presume Sit is what we have adequate?

H- velocities are between

0 to 70 km/sec; these probably aren't very high.

Dubin - portion of sample we've looked at, scanning process
is slow.

gold vision - like to investigate
Soft

Luminous particles

Sunrise Flint and always show at Sunrise -
Back. Could they cause what 5-12 sec?

Heur - 5 stains show when we open collector box.

Much more collected (7 guest investigators) & we
worried about contamination between them.

S- A 20% yellow drop right in my window.

✓ (4)
Henry -

5-10:- We feel it was very imp. to do this test.

Agnes & we really to work while to get because for

S-1 Zodiacal Light (Ney)

Message to Ed -

We

How did you hold it so well.

Cieman -

Felt there was the problem holding 30 secs in EVA -

I practiced being on a car & 30 secs was too much.

During EVA - drifting so much

EVA - Just maintaining position is one most difficult task - restraining feet

Gene produced so much fatigue just to step out.

Reeled me in 150°, etc etc.

I don't think we could do it outside.

Gene - We turned out all lights except 3 red lights inside.

I put camera against the camera & slid it against the frame so I could hold hold & then Tom went for the part of the horizon

pitch was difficult - sight the horizon over the vertically to get M.W. on window.

3 (3)

We took 18 pix. Moon on last one &
then sunrise

17 good

1st picture taken toward the North.
Meg - How well do you think you held? Then I'll show you
Gene - the pictures

Didn't need handle - it's on right & down

I feel camera was held real well. Problem was
rates even harder than in S-11.

Meg - wd you like a sight? Wd give finite
15 secs, 30 secs in center

worst holds only represent 1 or 2 degree

Null rates for orbit rates is critical?

Gene - still difficult to line up camera with black horizon etc.

I concentrated on looking in the right direction.

0.8/sec in each direction

Problem - window at odd angle

Carmen - I closed my window

mine had clear area in center but ridge all around

S - I couldn't even see

C - a world of stars when put out all lights

Light leak inside capsule att. control

visually saw the Z.D.

Day after full Moon
holding?

Magell. obs -
? ~~in help of~~ ~~light~~ ~~up~~?

S - when Sun goes down you see lightning everywhere

Jane - top edge of angular sharper

9

3/c in

* lightning, angular, M.W., stars

12 - wisps - near sunrise

Tuned away off bet. each exp

twilight & z. l. in sunrise photos (Venus)

like Jorda's description of usual

Roach - Can you hold on a bright star?

S - of ed use a reticle & foresight cd really be on the needle

Neg - should we never think of 2 mins.

Jane - 30 secs seems a long time

Neg - Voice tape - tie backs on each? No.

Father - I didn't see anything on that.

44F-VHF Polaris.

5 1/2 orbits of data

11:40 M-5 Bioassays

B. Harrison; - Biomedical Analysis of Body Fluids

11:45 Am.

Gen'l Scientific Observations

Q: Stars in daylight?

No

S - In twilight as cross in line, Antares

J - Sunrise on a day after a moon are quite different for the 2
us.

M - He could see stars while down in daylight.

S - 3 stars in belt on Jan 6

Sirius, Rigel (Wally's comment)

Louman - SD or be useful around in S. America
only had 2 or so before.

Gene - Could only see stream flickering through.
Very dark above the rain forest.

J - "Plemons"; no Black & tempered with green.

Louman - Any flares off NW Coast of S. America?

S - Can't answer.

Gene - Hasselblad with filter

S - Transer

Did not have GT-10 flight plan, no onboard data

Tommy's checks

of clouds

not try?

only not try?

Speed 500 ft/sec

use faster Speed

use faster Speed

use faster Speed

use faster Speed

Woman worked well, better than Hasselblad.

Strike over Africa taken.

K - could you adjust brightness of prints?

J - not as fine as I'd like - I'd like to go ~~faster~~ ^{for} dinner.

K - did you use ring on shift? J - yes, with my fingernail
- were you pressed for time?

J - as a matter of fact we had time to wait for sunrise.

It was slower because we were saving fuel.

J - Bore sight will reduce time by 25%.

K - Est. to take twilight fix ok. J - we took what you
gave & apparently they were.

JK - would it be better just to use your own judgment?

J - No, I was glad to have the times. We were glad to have
the times so we knew what to shoot at.

K - did you see any color in the twilight air glow?

J - No - just grey or No COLOR

J - I use word "milky" to describe appearance

Shades

5 sec exp.

Na + "Na" - duvdyum

* Different levels show up

Intatt - what about brightening?

J - yes, it'd bring you in

(Quick look at Jan 9)

Film showing to be shown by film unit (15 mins.)

11:30 A.M. -

Rest of 5-1

(5) (4)

Jene - Maintaining position a major problem

Key - how do it outside

J - Mount camera clamped on forward hatch

ATPA - 20 mi away 10x dia. of Venus.

Never saw any flashing lights.

Roach - Did you ever see "sparkles" coming off ATPA?

J - No - none

whitish-blue & then whitish-orange

John Hintz -

foresight and cut down on field preview.

Key - Helos was a nice light trap

- "It was a great job!"

Sen - We'd like some Key - We'll get

3-11 Koon

K - "After leaving the voice tape I wasn't sure whether to come without my hard hat!"

J - We haven't heard them yet

J - How good rates?

K - I think they were very good

J - Pts about boresighting same as for 5-1

J - Platform up all the time.

J - Sight and give you more control

J - Comic

J - we took 'timer' off as it wasn't working -
used time locks

J - very difficult operation & in terrible pos'n
- our hands were cramped & aching afterwards

K - Control was too coarse?

J - Make lever as short as possible on pitch control
Hard to get in those points in zero-g

K - Holding on to what you were supposed to guide.

J - no fingerpin to loc. of way to handle things?

K - Bracket on window from orbit to orbit?

J - yes, took it off prior to EVA

J - didn't get last 2 pix loc. Camera was started before
start S1 & they

K - air flow sometimes sharper than others (45-foot pix
thruster pix black

J - Does bright moon help the air flow -

K - we don't think it affects air flow at all?

K - Evids. of difference in intensity & alt. on the 2 filters

J - Dr. Key's expt as beaming course for S-11

- lightning flashes

K - last 4 pix { 2 extra sets of exp.
5 & 10 sec with filters

J - Decision not to go

We had 6 ft of fuel left

J - last 2 dots were what you need, not 3.

MSC goes - guess about straps

J - In against straps, lanyards & tethers

If have to get up, you will need restraint, your feet will start floating

Jen couldn't see out my window other than

S - window covers did help some

R - Did see 2. l. several times

How close to Sun?

J - No chance to look for those phenomena as such because we had to sleep or look for ATDA

Color pictures:-

Good Limb Shots

Dubin - Moon?

Key - Could you occult the Moon behind the ATDA?

Rosch - Could wash out stars with Moon.

Underwood - ATDA & A in same picture

Jen - I had a plan to observe a no. 7 thing but when time came I was so fogged up I couldn't proceed.

R - Imp. to find out whether "in space" or the window.

S - It's my impression it's something outside

Key - Was Sun ever occulted by ATDA?

S - We didn't stay with it too long

S - Closed hatch while outside

Neg - Did you see stars as well then (Sun visible to Gene) as at night?

S - as black then as

Neg - Earthlight might cause the problem

- We are trying to distinguish between

1. Daytime with earthlight

2. " without earthlight

3. nighttime

Duckman -

We need to understand each other & for others to understand what we mean.

"Local daytime"

R - Will you see stars on the Moon days?

S - black & sun set on 6th magm.

☉ 2 or 3° above H.

R - open hatch & look out

S - I could not see thru Gene's hatch

Gemini IX

NOTICE HAS BEEN RECEIVED THAT THE GEMINI XI CREW WILL HAVE A WORKING SESSION AT THE MOREHEAD PLANETARIUM, CHAPEL HILL, NORTH CAROLINA, ON JUNE 22-23, 1966. THIS SESSION WILL BE USED TO REFINER PROCEDURES FOR THE ACCOMPLISHMENT OF THE FLIGHT'S ASTRONOMICAL EXPERIMENTS.

IT IS REQUESTED THAT THE S-11, S-13, S-29, S-30, AND IF ASSIGNED, THE S-28 INVESTIGATORS BE NOTIFIED OF THE TIME AND PLACE OF THIS SESSION.

DR. GILL OF THE MANNED FLIGHT EXPERIMENTS OFFICE URGES YOUR SUPPORT OF THIS BRIEFING SESSION AT MOREHEAD PLANETARIUM.

15/WBF

WILLIS B. FOSTER, DIRECTOR
MANNED FLIGHT EXPERIMENTS OFFICE

2 2

6/7/66 3:00 p.m.

UNCLASSIFIED

NASA HEADQUARTERS

X

MR. MARTIN J. KOOMEH
U.S. NAVAL RESEARCH LABORATORY
WASHINGTON, D.C.

DR. KARL G. HENIZE
DEARBORN OBSERVATORY
NORTHWESTERN UNIVERSITY
EVANSTON, ILLINOIS

DR. FRANKLIN E. ROACH
DEPUTY DIRECTOR, AERONOMY DIVISION
ENVIRONMENTAL SCIENCE & SERVICES ADMINISTRATION
BOULDER, COLORADO

MR. LAWRENCE DUNKELMAN
GODDARD SPACE FLIGHT CENTER
GREENBELT, MARYLAND

DR. CURTIS L. HEMERWAY
THE DUDLEY OBSERVATORY
ALBANY, NEW YORK

DR. EDWARD P. NEY
SCHOOL OF PHYSICS
UNIVERSITY OF MINNESOTA
MINNEAPOLIS, MINNESOTA

MR. ELLIOT C. MORRIS
U.S. GEOLOGICAL SURVEY
CENTER OF ASTROGEOLOGY
FLAGSTAFF, ARIZONA

cc: SG/Mr. Dubin
SM/Dr. Gill
MSC/Mr. Piland
MSC/Mr. Slayton

SM:JRGILL:KBY 20611 6/7/66

Dr. Jocelyn E. Gill
Manned Flight Experiments Office

x 20611

1 2
6/7/66 3:00 p.m.

UNCLASSIFIED

NASA ROUTING SLIP

	CODE	NAME (if necessary)	
			ACTION
			APPROVAL
1.		Terry / Chris	CONCURRENCE
			FILE
2.			INFORMATION
			INVESTIGATE AND ADVISE
3.			NOTE AND FORWARD
			NOTE AND RETURN
4.			PER REQUEST
			RECOMMENDATION
5.			SEE ME
			SIGNATURE
6.			REPLY FOR SIGNATURE OF:
7.			

REMARKS:

Gemini IX File pls

FROM:	CODE:	NAME: <i>JRF</i>	DATE: 2/5/66
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SM

HQE729

PP MSKSCF

DZ NASAHQ 162 1532046

ZNR UUUUU

P 072027Z

FM NASA HEADQUARTERS WASHDC

TO KENNEDY SPACE CENTER FLA

NASA

BT

UNCLAS SM-162. GEMINI IX ASTRONAUTS LT COLONEL THOMAS STAFFORD

- LT COMMANDER EUGENE CERNAN ASTRONAUTS OFFICE

TALK ABOUT AN ACE IN THE HOLE... CONGRATULATIONS TO GEMINI IX ON CARRYING OUT A MOST DIFFICULT AND TRYING MISSION. YOUR PATIENCE AND COURAGE WERE REWARDED. WE ARE PLEASED THAT YOU WERE ABLE TO CARRY OUT MOST OF THE EXPERIMENTS AND LOOK FORWARD EAGERLY TO THE RESULTS. THANK YOU SO MUCH FOR YOUR OUTSTANDING COOPERATION AND EFFORT IN THIS REGARD. A SPECIAL MESSAGE TO THE PILOT FROM DR. JOCELYN GILL, A FELLOW PROVISORITE WHO PRECEDED HIM BY A FEW YEARS, WARM CONGRATULATIONS ON THE LONG SPACE WALK--IT WAS EXPECTED OF COURSE THAT PROVISOR COULD ACCOMPLISH IT.

/S/ WILLIS B FOSTER DIRECTOR MANNED FLIGHT EXPERIMENTS OFFICE

BT

NNNN

NAME OF AGENCY NASA HEADQUARTERS		PRECEDENCE ACTION: INFO.: PRIORITY		SECURITY CLASSIFICATION UNCLASSIFIED	
ACCOUNTING CLASSIFICATION		TYPE OF MESSAGE ☒ SINGLE ☐ BOOK ☐ MULTI-ADDRESS		STANDARD FORM 14 REV. MARCH 15, 1957 GSA REGULATION 2-IX-203.04 14-303	
THIS BLOCK FOR USE OF COMMUNICATIONS UNIT 1966 JUN 7 20 27				TELEGRAPHIC MESSAGE OFFICIAL BUSINESS U. S. GOVERNMENT	
MESSAGE TO BE TRANSMITTED (Use double spacing and all capital letters)					THIS COL. FOR AGENCY USE
START MESSAGE ADDRESS HERE DO NOT TYPE MESSAGE BEYOND THIS LINE GEMINI IX ASTRONAUTS LT. COLONEL THOMAS STAFFORD LT. COMMANDER EUGENE CERNAN ASTRONAUTS OFFICE KENNEDY SPACE CENTER KENNEDY SPACE CENTER, FLORIDA TALK ABOUT AN ACE IN THE HOLE! CONGRATULATIONS TO GEMINI IX ON CARRYING OUT A MOST DIFFICULT AND TRYING MISSION. YOUR PATIENCE AND COURAGE WERE REWARDED. WE ARE PLEASED THAT YOU WERE ABLE TO CARRY OUT MOST OF THE EXPERIMENTS AND LOOK FORWARD EAGERLY TO THE RESULTS. THANK YOU SO MUCH FOR YOUR OUTSTANDING COOPERATION AND EFFORT IN THIS REGARD. A SPECIAL MESSAGE TO THE PILOT FROM DR. JOCELYN GILL, A FELLOW PROVISORITE WHO PRECEDED HIM BY A FEW YEARS, WARM CONGRATULATIONS ON THE LONG SPACE WALK--IT WAS EXPECTED OF COURSE THAT PROVISO COULD ACCOMPLISH IT. WILLIS B. FOSTER, DIRECTOR MANNED FLIGHT EXPERIMENTS OFFICE					
NAME AND TITLE OF ORIGINATOR (Type) Dr Jocelyn R. Gill Manned Flight Experiments Office		ORIGINATOR'S TEL. NO. x20611		DATE AND TIME PREPARED 6/6/66 4:00 p.m.	
I certify that this message is official business, is not personal, and is in the interest of the Government.				SECURITY CLASSIFICATION UNCLASSIFIED	
(Signature)					

NAME OF AGENCY NASA HEADQUARTERS		PRECEDENCE ACTION: INFO: PRIORITY TYPE OF MESSAGE ☒ SINGLE ☐ BOOK ☐ MULTI-ADDRESS		SECURITY CLASSIFICATION UNCLASSIFIED STANDARD FORM 14 REV. MARCH 15, 1957 GSA REGULATION 2-IX-203.04 14-303	
ACCOUNTING CLASSIFICATION		THIS BLOCK FOR USE OF COMMUNICATIONS UNIT		TELEGRAPHIC MESSAGE OFFICIAL BUSINESS U. S. GOVERNMENT	
MESSAGE TO BE TRANSMITTED (Use double spacing and all capital letters)				THIS COL. FOR AGENCY USE	
GEMINI IX ASTRONAUTS LT. COLONEL THOMAS STAFFORD LT. COMMANDER EUGENE CERNAN ASTRONAUTS OFFICE KENNEDY SPACE CENTER KENNEDY SPACE CENTER, FLORIDA TALK ABOUT AN ACE IN THE HOLE! CONGRATULATIONS TO GEMINI IX ON CARRYING OUT A MOST DIFFICULT AND TRYING MISSION. YOUR PATIENCE AND COURAGE WERE REWARDED. WE ARE PLEASED THAT YOU WERE ABLE TO CARRY OUT MOST OF THE EXPERIMENTS AND LOOK FORWARD EAGERLY TO THE RESULTS. THANK YOU SO MUCH FOR YOUR OUTSTANDING COOPERATION AND EFFORT IN THIS REGARD. A SPECIAL MESSAGE TO THE PILOT FROM DR. JOCELYN GILL, A FELLOW PROVISOITE WHO PRECEDED HIM BY A FEW YEARS, WARM CONGRATULATIONS ON THE LONG SPACE WALK--IT WAS EXPECTED OF COURSE THAT PROVISO COULD ACCOMPLISH IT. WILLIS B. FOSTER, DIRECTOR MANNED FLIGHT EXPERIMENTS OFFICE				DO NOT TYPE MESSAGE BEYOND THIS LINE	
NAME AND TITLE OF ORIGINATOR (Type) Dr Jocelyn R. Gill Manned Flight Experiments Office		ORIGINATOR'S TEL. NO. x20611		DATE AND TIME PREPARED 6/6/66 4:00 p.m.	
I certify that this message is official business, is not personal, and is in the interest of the Government.				SECURITY CLASSIFICATION UNCLASSIFIED	

GEMINI IX ASTRONAUTS
LT. COLONEL THOMAS STAFFORD
LT. COMMANDER RICHARD C. SMITH
ASTRONAUTS OFFICE
KENNEDY SPACE CENTER
KENNEDY SPACE CENTER, FLORIDA

TALK ABOUT AN ACE IN THE HOLE! CONGRATULATIONS TO GEMINI IX ON
CARRYING OUT A MOST DIFFICULT AND TRYING MISSION. YOUR PATIENCE
AND COURAGE WERE REWARDED. WE ARE PLEASED THAT YOU WERE ABLE TO
CARRY OUT MOST OF THE EXPERIMENTS AND LOOK FORWARD EAGERLY TO THE
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DR. JOCELYN GILL, A FELLOW PROVISOR WHO PERCEIVED HIM BY A FEW
YEARS, WARM CONGRATULATIONS ON THE LONG SPACE WALK--IT WAS
EXPECTED OF COURSE THAT PROVISO COULD ACCOMPLISH IT.

cc: Dr. Roach/ESS/Boulder
Mr. Dunkelman/GSFC
Mr. Piland/MSC
Mr. Smistad/MSC
Mr. Eaton/MSC
Mr. Slayton/MSC

Willie B. Foster
WILLIS B. FOSTER, DIRECTOR
MANNED FLIGHT EXPERIMENTS OFFICE

Dr. Jocelyn R. Gill
Manned Flight Experiments Office

20611

6/6/66 4:00 p.m.

JRG
SM:JRGill:kby 20611 6/6/66

UNCLASSIFIED

UNITED STATES GOVERNMENT

Memorandum

Kathy
File

WSF

TO : SM/Director, Manned Flight Experiments Office

DATE: June 6, 1966

FROM : SM/Manned Flight Experiments Office

SUBJECT: Scientific Experiments carried out on Gemini IX

The Gemini IX mission carried the following OSSA experiments:

- S-10 Agena Micrometeorite Collection
- S-11 Airglow Horizon Photography
- S-12 Gemini Micrometeorite Collection

In spite of a slight flurry last Friday night to throw in additional experiments as a possible backup in the event of failure of the ATDA, no new experiments were introduced. This was a consequence of the decision to introduce no additional film packs which could have accommodated some more experimental activity. (Ref. TWX to Dr. John Clark re S-28 support for Gemini IX, 5/27/66 and TWX to 4 experimenters and their directors re S-5, S-6, S-28 and S-29, 5/31/66).

Nonetheless, it is anticipated that some photographs will have been taken for S-5 and S-6 (Synoptic Photography) on the operational film carried--even though this experiment was not scheduled for Gemini IX.

As of Sunday, June 5th at 11:30 e.d.t. telephone contact with Norman Foster's office indicated the following on experiments. (Talked with Ed Zeitler, MSC both Saturday and Sunday. He is the editor on the experiments status report).

The efforts to dislodge the shroud from the ATDA, (called by Tom Stafford as "an angry alligator,") were in vain so docking with the ATDA was scrubbed from the mission. At this point there was some concern over the fuel supply and a thought that it might not be possible to carry out all the experiments. The status of scientific experimental activity is given below.

1. S-10, Agena Micrometeorite Collection, Dr. C. Hemenway, Dudley Observatory

The S-10 was carried on the ATDA, but it was impossible to get near it or to retrieve it. The S-10 was also carried on the Agena and there was no activity with it either. The S-10 is still on the ATDA and conceivably could be retrieved on a later mission.



2. S-11, Airglow Horizon Photography, M. Koomen, Naval Research Laboratory

The astronauts made 3 night passes on this experiment and reported "no problems" so it is assumed that the experiment went off as planned. They may be able to devote 1 more night pass to it during the mission. They are still planning the 2-1/2 hour EVA. At the start of the experiments they had 50 lbs. of fuel left and at the end, so it is reported, they still had 50 lbs!! (GET 27 hrs, 29 hrs, 31 hrs for S-11).

3. S-12, Gemini Micrometeorite Collection, Dr. C. Hemenway, Dudley Observatory

The collection box was activated and had five hrs* exposure before closing it so jets could be freely used. The decision was made to reactivate it during the astronauts 10 hr. sleep period. It was closed again and retrieved by Cernan during his space walk. So S-12 collection box is being returned in the Gemini IX capsule. (The experimenter was asked whether it would be safe to try a second exposure and asked whether the astronauts could recall whether the closing cycle on the box had taken about 30 secs. They apparently could not hear it and so could not make this determination.)

* (GET 12 to 17 hrs.)

S-5 and S-6, Synoptic Photography, Dr. Paul Lowman and K. Nagler

There is no word on how many pictures have been taken. The newspapers have made reference to a picture of Baja California, and since there was a good deal of operational film aboard, it is expected that there may be quite a few. Cernan during EVA was asked whether he had the Hasselblad camera outside and the reply was "yes." In talking with Dr. Lowman I learned that this is probably the wide-angle (90 deg.) Hasselblad and may very well produce some spectacular pictures.

From the standpoint of our experiments this seems to be a good mission. We should have results from S-12 and S-11 as well as S-5 and S-6. Many more pictures for the successive volumes of the Earth Atlas.

Jocelyn R. Gill

Jocelyn R. Gill
Manned Flight Experiments Office

NASA ROUTING SLIP

	CODE	NAME (if necessary)	ACTION
1.		<i>Shirley</i>	APPROVAL
			CONCURRENCE
			☒ FILE
2.			INFORMATION
			INVESTIGATE AND ADVISE
3.			NOTE AND FORWARD
			NOTE AND RETURN
4.			PER REQUEST
			RECOMMENDATION
5.			SEE ME
			SIGNATURE
6.			REPLY FOR SIGNATURE OF:
7.			

REMARKS:

Pls file Gemini IX

FROM:	CODE:	NAME: <i>JR Sill</i>	DATE: <i>3/17/67</i>
-------	-------	----------------------	----------------------

6/6/66

Memo to Foster

From: J. R. Gill

Subject: Scientific Experiments carried out on Gemini IX.

The Gemini IX mission carried the following OSSA experiments:

S-10 Agena Micrometeorite Collection

S-11 Airglow Horizon Photography

S-12 Gemini Micrometeorite Collection

In spite of aslight flurry last Friday night to throw in additional experiments as a possible backup in the event of failure of the ATDA, no new experiments were introduced. This was a consequence of the decision to introduce no additional film packs which could have accomadated some more experimental activity. (Ref. TWX to Dr. John Clark re S-28 support for Gemini IX, ~~6/5/27/66~~ and TWX to 4 experimenters and their directors re S-5, S-6, S-28 and S-29, ~~6/5/31/66~~)

Nonetheless, it is anticipated that some photographs will have been taken for S-5 and S-6 (Synoptic Photography) on the operational film carried-- even though this experiment was not scheduled for Gemini IX.

As of Sunday June 5th at 11:30 EDT telephone contact with Norman Foster's office indicated the following on experiments. (Talked with Ed Zeitler, MSC both Sat/and Sun. He is the editor on the experiments status report).

Efforts to dislodge the shroud from the ATDA, (called by Tom Stafford "an angry ~~with~~ alligator", were in vain so docking with the ATDA was Scrubbed from the mission. At this point there was some concern over the fuel supply and thought that it might not be possible to carry out all the experiments. The status of scientific experimental activity is given below.

1. S-10, Agena Micrometeorite Collection, Dr. C. Hemenway, Dudley Observatory
The S-10 was carried on the ATDA, but it was impossible to get near it or to retrieve it. (The S-10 was also carried on the Agena and there was no activity with it either.) ~~immediatly decommissioned~~ The S-10 is still on the ATDA and conceivably could be retrieved on a later mission.
2. S-11, Airglow Horizon Photography, M. Koomen, Naval Research Laboratory
The astronauts made 3 night passes on this experiment and reported no problems so it is assumed that the experiment went off as planned. they may be able to devote 1 more night pass to it during the mission. They are still planning the 21/2 hour EVA. At the start of the experiments they had 50 lbs. of fuel left and at the end, so it is reported, they still had 50 lbs!! (GET 27 hrs, 29 hrs, 31 hrs.)
3. S-12, Gemini Micrometeorite Collection, Dr. C. Hemenway, Dudley Observatory
The collection box was activated and had about 10 hrs. exposure before closing.

it so jets could be freely used. The decision was made to reactivate it during the astronauts 10 hr. sleep period. It was closed again and retrieved by Cernan during his space walk. So S-12 collection box is being returned in the Gemini IX capsule. (the experimenter was asked whether it would be safe to try a second exposure and asked whether the astronauts could recall whether the closing cycle on the box had taken about 30 secs. They apparently could not hear it and so could not make this determination.) The first exposure ~~was~~ was started at GET 12 hrs and closed at 17 hrs.

S-5 and S-6; Synoptic Photography, Dr. Paul Lowman Jr. and K. Nagler.

There is no word on how many pictures have been taken. The newspapers made reference to a picture of Baja California, but since there was a good deal of operational film aboard, it is expected that there may be quite a few. Cernan during EVA was asked whether he had the Hasselblad camera outside and the reply was "yes."

In talking with Dr. Lowman I learned that this is probably the wide-angle (90 deg. Hasselblad) and may very well produce some spectacular pictures.

From the standpoint of our experiments this seems to be a good mission. We should have results from S-12 and S-11 as well as S-5 and S-6. Many more pictures for the successive volumes of the Earth Atlas.

Jocelyn R. Gill
Manned Flight Experiments Office

• NASA HEADQUARTERS ROUTING SLIP

	CODE	NAME (if necessary)	☒ ACTION
			APPROVAL
1.		Kathy	CONCURRENCE
			FILE
2.			INFORMATION
			INVESTIGATE AND ADVISE
3.			NOTE AND FORWARD
			NOTE AND RETURN
4.			PER REQUEST
			RECOMMENDATION
5.			SEE ME
			SIGNATURE
6.			REPLY FOR SIGNATURE OF:
7.			

REMARKS:

Plz send "info copy" to
 Dr. Orr Reynolds — so he
 will know the result of his
 sign off on Fri night.

JRP

FROM:	CODE:	NAME:	DATE: 6/6/66
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GILT

HQS733
PP WONASA HOUMSC
DE NASAHQ 7722 1512235
ZNR UUUUU
P 312229Z
FM NASA HQ WASHINGTON D C
TO RUECYH/U S WEATHER BUREAU SATELLITE CENTER SUITLAND MD
NAGSFC/GODDARD SPACE FLIGHT CENTER GREENBELT MD
WONASA/U S GEOLOGICAL SURVEY BRANCH OF ASTROGEOLOGY FLAGSTAFF ARIZONA
HOUMSC/MANNED SPACECRAFT CENTER HOUSTON TEX
NASA
BT
UNCLAS SM-7722. ATTN SATELLITE CENTER-DIRECTOR CMA INFO KENNETH NAGLER
/S-6/ ATTN GSFC-DIRECTOR CMA INFO LARRY DUNKELMAN S-28 AND DR PAUL
LOWMAN JR S-5 ATTN US GEOLOGICAL SURVEY-DIRECTOR CMA INFO ELLIOTT
MORRIS S-29 ATTN MSC-DIRECTOR.
AT 16.30 EDT CMA FRIDAY CMA MAY 29 WORD CAME THROUGH TO THE
MANNED FLIGHT EXPERIMENTS OFFICE CMA OSSA TO READY
EXPERIMENTS S-5 CMA S-6 CMA S-28 CMA AND S-29 FOR FLIGHT/AS
PARTIAL BACKUP ON THE GEMINI IX-A MISSION IN THE
EVENT OF AN ATDA FAILURE. THE EXPERIMENTERS CON-
CERNED WERE PROMPTLY INFORMED BY TELEPHONE AND THEY

PAGE 2 RUEDHQA7722 UNCLAS
PREPARED TO COMPLY WITH ANY BRIEFING REQUIREMENTS AT
THE CAPE OR FOR REAL-TIME MISSION PLANNING AT MSC.
OVER THE WEEKEND THE PLAN TO USE THESE ADDITIONAL
EXPERIMENTS AS A PART OF THE BACKUP FOR THE GEMINI IX-A
MISSION WAS ALTERED. THERE IS NO UNDERLINED CHANGE TO
BE MADE IN THE FILM PACKS CARRIED. HENCE NO ADDITIONAL
PHOTOGRAPHIC EXPERIMENTS CAN BE ACCOMPLISHED. IT IS
CONCEIVABLE THAT SOME PHOTOS FOR S-1 AND S-6 MAY BE
TAKEN ON AN OPPORTUNITY BASIS ON OPERATIONAL FILM
CARRIED. THE REQUEST FOR THE FOUR SUBJECT EXPERIMENTS
FOR GEMINI IX-A IS THEREFORE OFFICIALLY WITHDRAWN AT THIS
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VIZ. DR LOWMAN CMA JR. CMA MR NAGLER CMA MR DUNKELMAN CMA
MR MORRIS CMA ARE THANKED FOR THEIR WILLINGNESS TO COMPLY
WITH THIS SUDDEN REQUEST. IT IS REGRETTED THAT
INCONVENIENCE WAS CAUSED EACH OF YOU OVER THIS HOLIDAY
WEEKEND.
SGD HOMER E NEWELL/ASSOCIATE ADMIN SPACE SCIENCE AND APPLICATIONS/S/
BT

NNNN

GILT

HQS733
PP WONASA HOUMSC
DE NASAHQ 7722 1512235
ZNP UUUUU
P 312229Z
FM NASA HQ WASHINGTON D C
TO RUECYH/U S WEATHER BUREAU SATELLITE CENTER SUITLAND MD
NAGSFC/GODDARD SPACE FLIGHT CENTER GREENBELT MD
WONASA/U S GEOLOGICAL SURVEY BRANCH OF ASTROGEOLOGY FLAGSTAFF ARIZONA
HOUMSC/MANNED SPACECRAFT CENTER HOUSTON TEX
NASA

BT
UNCLAS SM-7722. ATTN SATELLITE CENTER-DIRECTOR CMA INFO KENNETH NAGLER
/S-6/ ATTN GSFC-DIRECTOR CMA INFO LARRY DUNKELMAN S-28 AND DR PAUL
LOWMAN JR S-5 ATTN US GEOLOGICAL SURVEY-DIRECTOR CMA INFO ELLIOTT
MORRIS S-29 ATTN MSC-DIRECTOR.
AT 16.30 EDT CMA FRIDAY CMA MAY 29 WORD CAME THROUGH TO THE
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VIZ. DR LOWMAN CMA JR. CMA MR NAGLER CMA MR DUNKELMAN CMA
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INCONVENIENCE WAS CAUSED EACH OF YOU OVER THIS HOLIDAY
WEEKEND.

SGD HOMER E NEWELL/ASSOCIATE ADMIN SPACE SCIENCE AND APPLICATIONS/S/
BT

NNNN

NAME OF AGENCY NASA - SM		PRECEDENCE ACTION: INFO.: PRIORITY	
ACCOUNTING CLASSIFICATION 8610-2110		TYPE OF MESSAGE ☐ SINGLE ☐ BOOK ☒ MULTI-ADDRESS	
THIS BLOCK FOR USE OF COMMUNICATIONS UNIT			

SECURITY CLASSIFICATION
 STANDARD FORM 14 REV. MARCH 15, 1957
 GSA REGULATION 2-IX-301.00
 14-304
TELEGRAPHIC MESSAGE
 OFFICIAL BUSINESS
 U. S. GOVERNMENT

MESSAGE TO BE TRANSMITTED (Use double spacing and all capital letters)	THIS COL. FOR AGENCY USE				
START MESSAGE ADDRESS HERE Director, Goddard Space Flight Center Greenbelt, Maryland Director, U.S. Weather Bureau Satellite Center Suitland, Maryland Director, U.S. Geological Survey Branch of Astrogeology Flagstaff, Arizona Director, Manned Spacecraft Center Houston, Texas Dr. Paul Lowman, Jr. (S-5) Goddard Space Flight Center Greenbelt, Maryland Mr. Kenneth Nagler (S-6) U.S. Weather Bureau Satellite Center Suitland, Maryland Mr. Larry Dunkelman (S-28) Goddard Space Flight Center Greenbelt, Maryland Mr. Elliott Morris (S-29) Branch of Astrogeology U.S. Geological Survey Flagstaff, Arizona AT 16:30 EDT, FRIDAY, MAY 29 WORD CAME THROUGH TO THE MANNED FLIGHT EXPERIMENTS OFFICE, OSSA TO READY EXPERIMENTS S-5, S-6, S-28, and S-29 FOR FLIGHT AS PARTIAL BACKUP ON THE GEMINI IX-A MISSION IN THE EVENT OF AN ATDA FAILURE. THE EXPERIMENTERS CONCERNED WERE PROMPTLY INFORMED BY TELEPHONE AND THEY DO NOT TYPE MESSAGE BEYOND THIS LINE	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; font-size: x-small;">PAGE NO.</td> <td style="width: 50%; font-size: x-small;">NO. OF PAGES</td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> </tr> </table>	PAGE NO.	NO. OF PAGES	1	2
PAGE NO.	NO. OF PAGES				
1	2				

NAME AND TITLE OF ORIGINATOR (Type) Dr. Jocelyn R. Gill Manned Flight Experiments Ofc.	ORIGINATOR'S TEL. NO. 20611	DATE AND TIME PREPARED 5/31 4:30 p.m.
I certify that this message is official business, is not personal, and is in the interest of the Government.		
_____ (Signature)		

NAME OF AGENCY NASA-SM		PRECEDENCE		SECURITY	CLASSIFICATION STANDARD FORM 14 REV. MARCH 15, 1957 GSA REGULATION 2-IX-301.00 14-304
ACCOUNTING CLASSIFICATION 8610-2110		ACTION: INFO: PRIORITY TYPE OF MESSAGE ☐ SINGLE ☐ BOOK ☒ MULTI-ADDRESS			
THIS BLOCK FOR USE OF COMMUNICATIONS UNIT		TELEGRAPHIC MESSAGE OFFICIAL BUSINESS U. S. GOVERNMENT			
MESSAGE TO BE TRANSMITTED (Use double spacing and all capital letters)					THIS COL. FOR AGENCY USE
START MESSAGE ADDRESS HERE PREPARED TO COMPLY WITH ANY BRIEFING REQUIREMENTS AT THE CAPE OR FOR REAL-TIME MISSION PLANNING AT MSC. OVER THE WEEKEND THE PLAN TO USE THESE ADDITIONAL EXPERIMENTS AS A PART OF THE BACKUP FOR THE GEMINI IX-A MISSION WAS ALTERED. THERE IS <u>NO</u> UNDERLINED CHANGE TO BE MADE IN THE FILM PACKS CARRIED. HENCE NO ADDITIONAL PHOTOGRAPHIC EXPERIMENTS CAN BE ACCOMPLISHED. IT IS CONCEIVABLE THAT SOME PHOTOS FOR S-5 and S-6 MAY BE TAKEN ON AN OPPORTUNITY BASIS ON OPERATIONAL FILM CARRIED. THE REQUEST FOR THE FOUR SUBJECT EXPERIMENTS FOR GEMINI IX-A IS THEREFORE OFFICIALLY WITHDRAWN AT THIS TIME. THE FOUR EXPERIMENTERS AND THEIR ASSOCIATES VIZ. DR. LOWMAN, JR., MR. NAGLER, MR. DUNKELMAN, MR. MORRIS, ARE THANKED FOR THEIR WILLINGNESS TO COMPLY WITH THIS SUDDEN REQUEST. IT IS REGRETTEED THAT INCONVENIENCE WAS CAUSED EACH OF YOU OVER THIS HOLIDAY WEEKEND.  HOMER E. NEWELL DO NOT THE MESSAGE BEYOND THIS LINE					
NAME AND TITLE OF ORIGINATOR (Type) Mr. Willis Foster, Director Manned Flight Experiments Office		ORIGINATOR'S TEL. NO. 20180		DATE AND TIME PREPARED 4:30 P.M. 5/31/66	
I certify that this message is official business, is not personal, and is in the interest of the Government.					
(Signature)					

NASA HEADQUARTERS ROUTING SLIP

#	CODE	NAME (if necessary)		ACTION
1.	SM	Mr. Foster <i>WBF</i>		CONCURRENCE
				FILE
2.	S	Dr. Newell		INFORMATION
				INVESTIGATE AND ADVISE
3.				NOTE AND FORWARD
				NOTE AND RETURN
4.	SM	Kathy (last)		PER REQUEST
				RECOMMENDATION
5.				SEE ME
				SIGNATURE
6.				REPLY FOR SIGNATURE OF:
7.				

REMARKS:

Subject: Request for attendance of
Mr. L. Dunkelman at Gemini IX
Experiments Debriefing, MSC

May 24, 1966

Dr. Newell -

*This specific request is
being made at Dr. Clark's
request.*

Will.

FROM:	CODE: <i>SM</i>	NAME: <i>J. R. Gill</i>	DATE: <i>5/13/66</i>
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MAY 25 1966

SM-(JRG:kby)

TO : Director, Goddard Space Flight Center

FROM : S/Associate Administrator for
Space Science and Applications

SUBJECT: Request for attendance of Mr. Lawrence Dunkelman
at Gemini IX Experiments Debriefing,
Manned Spacecraft Center

The Gemini IX Experiments Debriefing will be held at the Manned Spacecraft Center approximately nine (9) days following recovery. In the interests of continuity in the Geo-Astronomical Observations Program, Dr. Gill has asked that Mr. Lawrence Dunkelman be permitted to participate.

Mr. Dunkelman has been of considerable assistance in this program since the days of the Ad Hoc Committee and has in the past eight months been instrumental in formulating solid experiments as well as visual tasks.

Your cooperation in arranging for his participation will be greatly appreciated.

Original Signed by
Homer E. Newell

Homer E. Newell
Associate Administrator for
Space Science and Applications

Concurrence:


Willis B. Foster


Jocelyn R. Gill

cc: S/Newell
Subject File: GT-9 file
SM Reading Files

SM:JRGill:kby 20611 5/13/66
rewritten: SM:WBFoster:kby 35886 5/19/66

NASA HEADQUARTERS ROUTING SLIP

	CODE	NAME (if necessary)	✓ ACTION
			APPROVAL
1.		<i>Kathy</i>	CONCURRENCE
			FILE
2.			INFORMATION
			INVESTIGATE AND ADVISE
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			NOTE AND RETURN
4.			PER REQUEST
			RECOMMENDATION
5.			SEE ME
			SIGNATURE
6.			REPLY FOR SIGNATURE OF:
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REMARKS:

Foster says "go ahead"
with this.

FROM:	CODE:	NAME: <i>grf</i>	DATE: <i>5-13/66</i>
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Special

NASA HEADQUARTERS ROUTING SLIP

	CODE	NAME (if necessary)	ACTION	
1.		Foster		APPROVAL
				CONCURRENCE
				FILE
2.			X	INFORMATION
			✓	INVESTIGATE AND ADVISE
3.				NOTE AND FORWARD
				NOTE AND RETURN
4.				PER REQUEST
				RECOMMENDATION
5.				SEE ME
				SIGNATURE
6.				REPLY FOR SIGNATURE OF:
7.				

REMARKS:

Mr. Dunkelman suggests that a simple communication on this single item might be helpful in taking care of the "next crisis" on the horizon—the Gemini IX Debriefing which will come about near the end of May. The 29th, Sunday, is the earliest date.

re Dunkelman in general: he says that Townsend is taking the problem "up the line." I interpret Townsend this to mean that he/is communicating the content of your telephne call with Townsend to the Director. Perhaps we will hear further on Monday.

FROM:	CODE:	NAME: J. R. Gill	DATE: 5/13/66
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File

GT-9

May 20, 1966

re telephone call to Mr. Eaton, MSC

Only scientific experiment affected by scrub is S-10, Micrometeorite Collection on the Agena. ATDA does not have capability to be placed in a parking orbit. Therefore, its life expectancy is quite low compared to Agena orbit. Plans to retrieve S-10. Not to be activated.* Another problem is stowage within reentry vehicle.

The other scientific experiments remain unaffected. Camera equipment removed. Will be reload prior to launch on 31 May.

from Gemini 9.

Mr. Eaton plans to call you again the first of next week with additional information.

* Assume this means the box will not be opened; will only "use" the outside collecting section. With EVA they will restore the closed box to the cabin. 5/2

May 20, 1966

re telephone call to Mr. Eaton, MSC

Only scientific experiment affected by scrub is S-10, Micrometeorite Collection on the Agena. ATDA does not have capability to be placed in a parking orbit. Therefore, its life expectancy is quite low compared to Agena orbit. Plans to retrieve S-10. Not to be activated. Another problem is stowage within reentry vehicle.

The other scientific experiments remain unaffected. Camera equipment removed. Will be reload prior to launch on 31 May.

Mr. Eaton plans to call you again the first of next week with additional information.

GT-IX

SM/Director,
Manned Flight Experiments Office

May 19, 1966

SM/Manned Flight Experiments Office

Effect on Scientific Experiments on Gemini IX Mission as a result of failure of Agena IX.

The following OSSA experiments are assigned to Gemini IX: S-1, S-10, S-11, and S-12. Details follow:

S-1, Zodiacal Light Photography, E. Ney, University of Minnesota

No change is expected in this experiment. Provided that GT-9 is able to go through the planned EVA, this experiment ought to be accomplished as written in the mission plan.

S-10, Micrometeorite Collection on the Agena, C. Hemenway, Dudley Observatory

The collection box attached to the Agena IX is lost. The back-up unit is at the Cape ready to be attached to the ATDA (target vehicle). The contingency mission plan written for the ATDA calls for the box to be retrieved in unopened condition. This means that collection of particles would be confined to the outside portion which was planned for the S-10. (It is shielded on launch). The mission plan calls for retrieval of the box and storing inside the Gemini spacecraft before reentry.

S-11, Airglow Horizon Photography, M. Koomen, Naval Research Laboratory

In the flight plan for the ATDA, there is the possibility of an increase from 3 to 4 night runs for this experiment. So it does not appear that it will suffer.

S-12, Micrometeorite Collection on the Gemini, C. Hemenway, Dudley Observatory

This experiment should be unaffected by the failure of Agena 9. It is planned to retrieve the collection box after some 8 hours of exposure and to return it inside the Gemini spacecraft.

Finally, it is pointed out that the general effect is to place more concern on operational problems, possibly shortening the time and effort for experiments.

Jocelyn R. Gill

CONCURRENCES:

OFFICIAL FILE COPY

OFFICE CODE ▶		Jocelyn R. Gill	Manned Flight Experiments Office		
SIGNATURE ▶					
DATE ▶					

UNITED STATES GOVERNMENT

Memorandum

TO : MEMORANDUM TO THE FILE

DATE: May 13, 1966

FROM : SM/Manned Flight Experiments Office

SUBJECT: Bulletin on S-11 experiment for Gemini IX.

The extended timer on the Maurer camera has failed. Will operate the sequence manually. The command pilot will mark off the exposures for the pilot and the experiment will proceed in this fashion. The principal investigator, M. Koomen, NRL, feels that the experiment will come off O.K.

The story is that one of the backup pilots using the flight model in the simulator and the cable broke. Then Eugene Cernan, the pilot, took the "flight backup" camera and this broke also. Needless to say this cable in the camera is a very weak link! R. T. Seal and M. J. Koomen were at the Cape while this was in progress.

In an effort to alleviate this problem for future Gemini flights, MSC is trying to develop a timer for the S-13 experiment which will include the film advance. They feel that it is coming along well and that they will accomplish this.

Jocelyn R. Gill

Jocelyn R. Gill
Manned Flight Experiments Office



Astronauts Thomas Stafford and Eugene Cernan
GEMINI IX

May 12, 1966

SM/Manned Flight Experiments Office

Astronomical Phenomena During the Flight of Gemini IX.

The month of May this year has two eclipses and as usual they are two weeks apart. A penumbral eclipse of the moon occurred on May 4th at full Moon. This is a type of partial lunar eclipse which usually goes completely unnoticed because it is barely detectable. But two weeks later on May 20th when the moon is new, an annular or ring eclipse of the sun will occur. This one will be observed by scientists and others able to see it. On this occasion the sun will be only partially covered by the moon so as to leave a bright ring or annulus around it.

The central eclipse path goes over North Africa to the south of Italy into the Mediterranean and over southern Greece. It will end in the USSR. The eclipse will be seen as partial over a much wider area of the earth than this, and I think it is possible you might see this aspect. The circumstances of this eclipse are as follows:

	<u>Date</u>	GMT
		h m
Eclipse begins	May 20	6:51
Central Eclipse begins		7:55
Central Eclipse begins at local noon		9:52
Central Eclipse ends		11:23
Central Eclipse ends		12:27

There will be several eclipse expeditions to observe this event. Among these is the Air Force Expedition which will fly in a KC 135 at 40,000 ft. over the Mediterranean Sea and also an expedition in southern Greece planned by the National Observatory of Athens. Following the eclipse there will be a NATO conference at the National Observatory at Athens to discuss solar problems. The Air Force plans ground studies of the sun during the eclipse at various radio frequencies. Just wanted you to know why the sun looked different, and the sky somewhat darker in case you happened to be flying at this time and had occasion to notice it.

As for other astronomical phenomena during your flight, the meteor plot for the year shows May as being a slim month compared to August. Nonetheless you may see some meteors and we will be interested to hear your report after flight. Auroras and airglow patches are unpredictable. If you see any, we would like you to record the time and your location and any features, such as color or shape or structure. Labeled sketches can be very useful for later analysis. You will find a print showing types of auroras among the enclosures with this memo.

Among the four 8x10 glossy prints which I am attaching to this memo, you will find one which illustrates types of auroras. All the prints enclosed are identified on the sheets attached to each print. The photo of the solar eclipse shows the dahlia-type corona which occurs at the maximum of the solar cycle. This annular eclipse discussed above will not show the corona since the sun has to be completely blotted out to show the pale coronal light.

Another item that should be mentioned is comets. I am not aware of any comet such as Ikeya-Seki which was seen last October-November being around just now, but one never knows when one may put in appearance. Should you happen to be looking at the sky near the sun just after sunset or before dawn and see a comet, please record the time, appearance, and an estimate of its position. The position is best given with respect to planets or stars you can see. This information should then be promptly reported either to me or to the Harvard College Observatory, Cambridge 38, Massachusetts.

Very best wishes for a highly successful flight. I shall be following it closely. After flight we will be most interested in anything you can tell us about it. Again, good luck to the Gemini IX Mission which is full of important operations and some interesting experiments. See you in Houston!

Jocelyn R. Gill

Jocelyn R. Gill
Manned Flight Experiments Office

Attachments: 4 glossy prints

cc: SM/Mr. Foster ✓ MSC/Major Lehr ✓ ESSA/Dr. Roach ✓
GSFC/Mr. Dunkelman ✓ MSC/Mr. Slayton ✓ MSC/Mr. McKee ✓
MSC/Cdr. Carpenter ✓

SM:JRGill:kby 20611 5/12/66

NASA ROUTING SLIP

	CODE	NAME (if necessary)	ACTION
1.	SM	Mr. Foster	APPROVAL
2.		<i>G. J. Gill</i>	CONCURRENCE
3.	→	<i>Kathy -</i>	FILE
4.		<i>Gemini IX</i>	INFORMATION
5.		<i>FILE pls.</i>	INVESTIGATE AND ADVISE
6.			NOTE AND FORWARD
7.			NOTE AND RETURN
			PER REQUEST
			RECOMMENDATION
			SEE ME
			SIGNATURE
			REPLY FOR SIGNATURE OF:

REMARKS:

Subject: Tentative List of invitees to attend Gemini IX Debriefing nine (9) days following recovery submitted by SM at request of John McKee, Crew Operations, MSC.

OK. WBF

FROM:	CODE: SM	NAME: J.R. Gill	DATE: 4/20/66
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UNITED STATES GOVERNMENT

Memorandum

TO : SM/Director,
Manned Flight Experiments Office

DATE: APR 20 1966

FROM : SM/Manned Flight Experiments Office

SUBJECT: Tentative list of invitees to attend Gemini IX Debriefing
nine (9) days following recovery submitted by SM at request
of John McKee, Crew Operations, MSC.

In a telcon on 4/19/66 Mr. John McKee requested a list from SM of invitees to attend subject debriefing. The next day, 4/20/66, I submitted the following list by telephone as per request. The names were: Dr. Franklin Roach, Mr. L. Dunkelman, Mr. M. Dubin, Dr. Henry Smith, and Dr. Jocelyn Gill.

Before placing these names on the list I informed the individual or his office of this action and the likely date when this would happen. There is, of course, nothing binding about the list and others may be added later.

Jocelyn R. Gill

Jocelyn R. Gill
Manned Flight Experiments Office
Office of Space Science and Applications



NASA HEADQUARTERS ROUTING SLIP

	CODE	NAME (if necessary)	ACTION
1.		W. Foster <i>WBF</i>	APPROVAL
2.		Dr. G. H. ... <i>WBF</i>	CONCURRENCE
3.		<i>Kathy -</i>	FILE
4.		<i>Senini IX</i>	INFORMATION
5.		<i>file pls.</i>	INVESTIGATE AND ADVISE
6.			NOTE AND FORWARD
7.			NOTE AND RETURN
			PER REQUEST
			RECOMMENDATION
			SEE ME
			SIGNATURE
			REPLY FOR SIGNATURE OF:

REMARKS:

Joelyn :

Travel looks feasible —
 you should attend ~~some~~ along
 with such others as you think
 essential.

WBF.

FROM:	CODE:	NAME:	DATE: <i>4/20/66</i>
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4/19/66

Memo to: W. Foster

From: J.R. Gill

Subject: Janini TX Experiments Debriefing,
late Recovery + 9 days

John McKee, 45C, has just phoned to
say that the schedule for Janini TX
Debriefing is nine days after recovery.

He has asked me to provide a list
of suggested names for attendance
(tentative).

Have you any suggestions, etc. on
this subject? What about TRAVEL??

Jacalyn

FOR INTERNAL USE ONLY

SM/Director,
Manned Flight Experiments Office

APR 27 1966

SM/Manned Flight Experiments Office

In reply refer to:
SM - (JRG:kby)

Status of Gemini IX Scientific Experiments

The experiments for the Gemini IX flight are:

- S-1, Zodiacal Light Photography,
- S-11, Airglow Horizon Photography,
- S-10, Micrometeorite Collection on the Agena, and
- S-12, Micrometeorite Collection on Gemini.

Mr. Wayne Eaton reported by telcon to me on April 21, 1966 that the condition of the subject experiments is satisfactory. Details follow.

S-1:

The equipment has been checked out by MAC. The astronauts have seen it at the Cape and are satisfied with the operational plan. They have had training units for some time. Dr. Ney and the crew have had time together so the briefing seems in good shape. The plan is to take one photo of the Milky Way and four (4) of the airglow just prior to ingress on the EVA operation. This is planned to be done on the second evening of flight. It is planned to use TRI-X film. Both units are now at the Cape and the flight loading of the film will take place four (4) days prior to the flight. During my visit to Dr. Ney on April 15th at the University of Minnesota, the principal investigator indicated to me that he was pleased with the plan and the crew briefing for Gemini IX. This confirms the telephone conversation with MSC re S-1.

S-11:

A flight unit was recently "downgraded" to training unit (this is just nomenclature). The crew has worked with the training unit and has seen the flight unit. The only difference in the training unit is that it has no actual filter, since this item is perishable, but the training unit is in all other respects identical to the flight unit. The flight unit will be at the Cape on April 29th. There has been a change in the bracket to hold this experiment. The first bracket made by MAC was unacceptable to the experimenter and apparently also to MSC.

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A new bracket, satisfactory to both MSC and the experimenter, has been constructed at the Naval Research Laboratory. This new bracket was seen at the meeting in St. Louis, is incorporated in the training unit, and MSC is well satisfied with it.

There is just one night pass for accomplishment on Gemini IX in view of extra operational considerations of S-11. This will make it possible to get 14 exposures and a sunrise period. This is not what Koomen, principal investigator, requested. He asked for four (4) night passes originally. Apparently, navigational equipment will have to usurp this time on IX. S-11 is scheduled for reflight on Gemini XI and XII.

S-10, S-12:

Both units have been checked out and fit-checked with the S/C. S-12 is opened from inside the cabin by an upper right-hand toggle switch designed to prevent inadvertent activation. Both pieces of equipment will be fit-checked at the Cape and then returned to the principal investigator at Dudley Observatory for flight loading. There is "clean room" space for Dr. Hemenway at the Cape also.

On Gemini IX the first activity will be to activate the S-12 which is done from inside the cabin. The second activity will be to open the S-10 micrometeorite box on the Agena. The S-10 box is fastened to the Agena by a velcro patch. (Just which Agena will be approached is unknown at this time; S-10 was attached to the Agena belonging to Gemini VIII; if all goes as planned there will also be one on the Agena belonging to Gemini IX. The SEDR H460 is scheduled for May 2nd and Wayne Eaton from MSC will be there. After that the collection boxes will be returned to Dudley for loading for flight.

According to the present plan the S-12 collection box will be retrieved first during the EVA planned for the first day of the mission.

In summary, there are some eight (8) hours of experiments (scientific experiments are only part of the total complement) scheduled for Gemini IX and there are only 4-1/2 hours in toto available for experiments according to O. Smistad, Experiments Office, MSC.

The final flight plan should be ready on the 18th and I have requested a copy.

Jocelyn R. Gill

cc: SM/Foster/Calio
SM Subject Files: GT-9
S-1, S-12, S-11
SM Reading Files

Jocelyn R. Gill
Manned Flight Experiments Office

File to Post

*File
Gemini 9*

(See later note on S-10)

FOR INTERNAL USE ONLY

APR 27 1966

SM/Director,
Manned Flight Experiments Office

SM/Manned Flight Experiments Office

In reply refer to:
SM - (JRG:kby)

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Jocelyn R. Gill

Jocelyn R. Gill
Manned Flight Experiments Office

File →

Gemin

IX A

file

~~Foster~~

~~SM~~ ~~G. H.~~

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FM NASA HQ WASHINGTON D C

TO RUECYH/U S WEATHER BUREAU SATELLITE CENTER SUITLAND MD

ZEN/GODDARD SPACE FLIGHT CENTER GREENBELT MD

ZEN/U S GEOLOGICAL SURVEY BRANCH OF ASTROGEOLOGY FLAGSTAFF ARIZONA

ZEN/MANNED SPACECRAFT CENTER HOUSTON TEX

NASA

BT

UNCLAS SM-7722. ATTN SATELLITE CENTER-DIRECTOR, INFO KENNETH NAGLER /S-6/ ATTN CSFC-DIRECTOR CMA INFO LARRY DUNKELMAN S-28 AND DR PAUL LOWMAN JR S-5 ATTN US GEOLOGICAL SURVEY-DIRECTOR CMA INFO ELLIOTT MORRIS S-29 ATTN MSC-DIRECTOR.

AT 16.30 EDT CMA FRIDAY CMA MAY 29 WORD CAME THROUGH TO THE MANNED FLIGHT EXPERIMENTS OFFICE CMA OSSA TO READY EXPERIMENTS S-5 CMA S-6 CMA S-28 CMA AND S-29 FOR FLIGHT AS PARTIAL BACKUP ON THE GEMINI IX-A MISSION IN THE EVENT OF AN ATDA FAILURE. THE EXPERIMENTERS CONCERNED WERE PROMPTLY INFORMED BY TELEPHONE AND THEY

PAGE 2 RUEDHQA7722 UNCLAS

PREPARED TO COMPLY WITH ANY BRIEFING REQUIREMENTS AT THE CAPE OR FOR REAL-TIME MISSION PLANNING AT MSC. OVER THE WEEKEND THE PLAN TO USE THESE ADDITIONAL EXPERIMENTS AS A PART OF THE BACKUP FOR THE GEMINI IX-A MISSION WAS ALTERED. THERE IS NO UNDERLINED CHANGE TO BE MADE IN THE FILM PACKS CARRIED. HENCE NO ADDITIONAL PHOTOGRAPHIC EXPERIMENTS CAN BE ACCOMPLISHED. IT IS CONCEIVABLE THAT SOME PHOTOS FOR S-1 AND S-6 MAY BE TAKEN ON AN OPPORTUNITY BASIS ON OPERATIONAL FILM CARRIED. THE REQUEST FOR THE FOUR SUBJECT EXPERIMENTS FOR GEMINI IX-A IS THEREFORE OFFICIALLY WITHDRAWN AT THIS TIME. THE FOUR EXPERIMENTERS AND THEIR ASSOCIATES VIZ. DR LOWMAN CMA JR. CMA MR NAGLER CMA MR DUNKELMAN CMA MR MORRIS CMA ARE THANKED FOR THEIR WILLINGNESS TO COMPLY WITH THIS SUDDEN REQUEST. IT IS REGRETTED THAT INCONVENIENCE WAS CAUSED EACH OF YOU OVER THIS HOLIDAY WEEKEND.

SGD HOMER E NEWELL/ASSOCIATE ADMIN SPACE SCIENCE AND APPLICATIONS/S/ BT

NASA ROUTING SLIP

	CODE	NAME (if necessary)	ACTION
1.	SM	Mr. Foster	APPROVAL
2.		<i>Catio</i>	CONCURRENCE
3.		<i>Harby - pla</i>	FILE
4.		<i>file GT-9</i>	INFORMATION
5.			INVESTIGATE AND ADVISE
6.			NOTE AND FORWARD
7.			NOTE AND RETURN
			PER REQUEST
			RECOMMENDATION
			SEE ME
			SIGNATURE
			REPLY FOR SIGNATURE OF:

REMARKS:

FROM:	CODE: SM	NAME: J.R. Gill:kby	DATE: 3/7/66
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UNITED STATES GOVERNMENT

Memorandum

TO : SM/Director, Manned Flight Experiments Office DATE: March 7, 1966

FROM : SM/Jocelyn R. Gill

SUBJECT: Status of Scientific (OSSA) Experiments on Gemini IX

The following scientific experiments are scheduled for Gemini IX: S-1, Zodiacal Light Photography; S-10, Micrometeorite Collection on Agena; S-11, Airglow Horizon Photography; S-12, Micrometeorite Collection on Gemini, related to S-10; and Dim Light Photography being presented to SSSC as S-28 on Friday, March 4, 1966. (L. Dunkelman, GSFC).

S-1: Zodiacal Light Photography, E. Ney, Univ. of Minnesota.

Astronaut briefing, Ney reports that one briefing has been held in Houston and another will be scheduled for the Planetarium. Elliott See, Charles Bassett and James Lovell were present for the first briefing; Tom Stafford was not. Under the circumstances, it is likely that the briefing will have to be repeated.

Equipment, The camera equipment is now at the Cape. Documentation has presented some problems, mainly the insistence on a new serial number for the camera since it now has a handle on it. The handle is mounted with holes on the camera. Tri-X film will be used with and without the window. With hatch open and using the spacecraft as an occulting disk, the astronaut will place himself in the shadow of the S/C and see how far out he can trace the extension of the solar corona. He will also take 4 pictures of the airglow and a picture of the Milky Way.

The principal investigator commented that he was very pleased with the enthusiastic reception from See and Bassett for the equipment and experiment. They have been the most interested in this experiment of all the astronauts who have been associated with it. Since Tom Stafford has been very cooperative in the experimental program, I personally have confidence that he will pick up where See and Bassett have left off, and that the experiment can go off as planned.

S-10: Micrometeorite Collection on Agena.

It employs the same bracket as S-12. This modus operandi has cost more than a new design and has given much trouble. GSI (government service inspection) has been a problem since it was not written into the contract. The problem is with the fairing with the handle in the open position. Lubrication has also been a problem since the contractor has applied it in "glops" instead of following instructions. The experiment is all ready, so far as equipment is concerned.



S-11: Airglow Horizon Photography, M. Koomen, NRL.

No difficulties in the schedule are anticipated. This is the first flight of this experiment and the flight hardware is on schedule. The equipment has passed environmental testing. The experiment is mounted on a movable bracket and is "pointed" by the astronaut.

The first briefing of the astronauts (See and Bassett) has been held and another is to be held later in the Morehead Planetarium. The astronauts seemed "reasonably happy" with the experiment according to the principal investigator.

S-12: Micrometeorite Collection on Gemini S/C:

On schedule. No problems reported by the principal investigator. This is the first flight of this experiment, having been canceled out on GT-6.

S-28: Dim Light Photography, L. Dunkelmann:

This experiment was first carried on Gemini VII and VI-A as "operational procedure." After processing by SSSC and MSFEB this month, it is hoped that it will assume full experiment status. It uses cameras already assigned to the S/C and sensitive black and white film, already qualified. Some further briefing will be required, probably at the Planetarium and possibly can be accomplished at the same time as S-1's Planetarium briefing.

Jocelyn R. Gill

SM/Director, Manned Flight Experiments Office

March 7, 1966

SM/Jocelyn R. Gill

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Jocelyn R. Gill

cc: MGS/Mr. Liccardi
MGS/Mr. Frandsen
MGS/Mr. Hall

SM:JRGill:kby 20593 3/7/66

Cops. to A.Liccardi, N. Frandsen, Eldon Hall

D R A F T - expedite!

Ready for final

3/3/66

Memo to Will Foster

From: J. R. Gill

Subject: Status of ~~Geminix IX~~ Scientific (OSSA) Experiments on Gemini IX

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