

LO BUGL

Date 10 August 1966

Number 3

THE BUGL SAYS:

SOUND OFF!
WHEE! WE'RE ON OUR WAY—

....after a fairly uneventful countdown. The launch operation looked pretty professional to me. It shows you've learned your jobs well. Let's hope the rest of the mission will go as well.

Dalton Webb, SFOD

"VOX POPULI"

Gerry Price, GYRO, "I feel great — now that we've found the sun."

Jack Graves, ACE 2, "that chick they've been hatching down at the Cape has flown the coop and now it's up to us."

Bob McCauley, DACON, "we didn't miss a thing! Between the two computer strings we logged 100% of the T/M and tracking data that came in. Total down time was less than 3 minutes."

Jim Martin, Mission Director, "A good job was done by the entire team."

Walt Blissell, DEUCE 2, "I'm delighted!"

Patti Pierson, SPAC Clerk, "It was fantastic! I just sat here in awe!"

Rolland Rung, SNOMAN, "Good show! Even the cafeteria schedule is in sync."

BUGL STAFF

SPAC Asst. BUGL Editors are Maurice Wilkinson and John Thomas. SPACers please send your BUGL items to them.

BIRD WATCHERS

Migration flight expected at Burbank at about 7:30 p.m. tonight. NASA passengers include Capt. L. Scherer, Program Manager Cliff Nelson, H. Smith, D. Wentz, and R. Mittauer. Kodak's Mr. Sasso and Mr. Constantino are aboard, as are Boeing passengers, Aerospace Group VP Lysle Wood, Program Manager Bob Halberg, George Hage, Ed Goodwin, Jay Beacon, George Bradley, Howard West, Bill Jury, and Bill Clothier.

FPAC FOIBLES

Guaranteed Method for GENL INITIALIZATION:

The ephemeris deck for GENL initialization should be read in by the following method to guarantee no problems:

1. Input "COMAND (INITILIZE)" part of deck as always.
2. Input ephemeris part of deck with "P" card (card with "P" punched in column 80) as first card.

This method will print every card on the Administrative Printer. Although this significantly increases the operation time of GENL, it does guarantee first time operation.

MUSINGS OF AN FPAC DIRECTOR

Now we're off on a real one and down the learning curve we go! Planning, procedures development, simulations and tests are at last behind us for awhile. Now we'll see how it really works and so far it looks pretty straight forward. It's sure great to get some first-hand experience. Let's make the most of it. There are 4.995 missions to go.

BOEING TRAVEL EXPENSE NOTE:

The 4% city tax normally charged on motel bills for periods of less than 30 days is a chargeable item not included in the \$10 limit set for the mission. The tax may be listed on expense reports; however, if your stay is in excess of 30 days, make certain your motel credits your final bill for the amount of tax you have already paid.

MOTHER HUBBARD SAYS ----

You boys who are away from home need to watch your diet! Ice cream bars and coffee are not sufficient and just because you don't feel hungry is no reason not to eat properly and that's why the cafeteria is open for you, and we've already had one awfully nice boy get sick from malnutrition and be sure to eat enough green vegetables too, and just remember that Mother Hubbard knows best.

MISSION STATUS RECORDING

Dottie and the girls at the Reception Desk update the recorded mission status message every hour on the hour. If your call to 6211 doesn't go through, they're probably getting set to give you the very latest info.

PERSONNEL ROSTER

Please add G. K. Esmeier to your copy of the TBC personnel roster. Home address, 2211 E. Washington Blvd., phone 798-6315. There's a copy of the roster at the mail stop for other corrections.

NEW MISSION ADVISOR CHIEF?

As we passed the MAA just after lift-off, we peered in the partly opened door and saw two of the Advisors on their knees - with bowed heads. Thought for an instant they were appealing to a power higher than their dart-board for further guidance, but as we rounded the corner we could see that they were only looking at a TTY printer up close.

End of this
document

LO BUGL

Date 11 August 1966 Number 4

CANOPUS PROBLEM

As of this writing, the problem with the Canopus sensor is still not resolved. The sensor has had a noise output varying from 2 to 4.7 volts. Canopus should provide a signal of about 3 volts, but so far has not been detectable in the noise. The moon, however, provides such a strong signal that the sensor is saturated at the maximum reading of 5 volts.

Bob Gates, ITT Rep., put it this way early today, "we appear to have a high level of star background noise, making it difficult to lock onto Canopus."

FPAC LOOKING IN NEW DIRECTION

FPAC is apparently too busy to write much today with the change of reference point for the first midcourse from Canopus to the moon. Ye olde ed looked in and saw them all busily looking intelligent but walking around with a '76" list to starboard.

SPAC SPECIALS

Bernie Wittman and Paul Fromme, Camera Analyst and Advisor from Eastman Kodak report, "Eastman Kodak is honored to have Mr. Sasso and Mr. Constantino identified as members of our company. RCA's loss is our gain." (Ed's note: The August 10 BUGL erroneously reported RCA's Messrs. Sasso and Constantino as E-K men. The E-K men who arrived on the VIP flight were Messrs. Elle and Bronson.)

737 COMPETITION?

A "Bird Watcher" who arrived last night says that 10 passenger "Falcon" by Dassault of France is a nice airplane.— It really goes — except when it runs out of olives.

GOLDSTONE REPORT

Floyd Layton, DSS 12 SLOE, reported that Station 12 was pretty busy today with all the nonstandard commands made necessary by the Canopus problem. However, they had a constant signal level from the S/C and no data line outages. Only problem was that the paper jammed in the DL-AN Printer the first time they turned it on. Sorry about that, Chief.

SEATTLE EDITION OF BUGL

Just got a call from a fellow up north who wants to help blow the BUGL. Seems like he wanted to have the thing printed up there at the same time as ours by use of Datafax'ed rough copy. We'll fix his wagon though. We'll send it to him after we've gone to press here so he won't scoop us. Flumb forgot to ask if he pays any extra for this type of service.

HOT LINE

The PBX operator at the Westerner added, "that extra touch" for those off-shifters who couldn't be here for lift-off. When one of the folks received a call from the Lab with the final stages of the countdown by Larry King from the Cape, the operator patched the call into every Boeing room so they could all hear it by direct wire. A tip of the editorial visor to that lady for such a thoughtful gesture.

PIO COURIER SERVICE

"Special handling" is the term for the team effort being planned to get reconstructed prints made for Press and TV from the original GNE films at Goldstone. Special courier service will be set up from Goldstone to Burbank by air, then to CFI in Hollywood for film processing, and finally to JPL by helicopter. Reconstruction and preparation of copies for the news media will be done at JPL.

NEW STEP TOWARD INTEGRATION?

The TBC mail station will be extended to include the NASA folks; that's all. No riots, please.

MOTHER HUBBARD SAYS:

Make sure you get enough sleep! Because if you don't, you might run off the road on the way home or bump somebody's nice car or even somebody and we've already had some problems like that, but luckily haven't had any injuries (knock on wood) so you should think about all the paperwork you'd have to fill out like city accident reports, Rite-Rate (or Gov't) insurance reports, and even reports to Boeing and/or your own insurance company so drive carefully and avoid the paperwork.

(Ed. note: It can happen here! It has happened here at least 4 times --- since August 1.)

BPAC LOOSE END

Our crew on the detached service LHDL* assignment, Joe Benezra and Dave VanZandt, report excellent progress in learning how to use the new program. They have confidently started practicing on the famous (infamous?) "LOPO MOON" problem.

* Lunar Harmonics Determination program

OVER EAGER??

The new parking arrangement is a boon but you've got to keep your wits in gear. One anxious party parked by the gate, signed in, and from force of habit charged on in to SPOF on foot. Before the guards resorted to impounding the car, they noted the WASHINGTON plates and with the help of a passing Seattlelite got the situation straightened out.

TEAM SCHEDULES

| <u>RED TEAM</u> | | <u>Start</u> | <u>End</u> |
|-----------------|------|--------------|------------|
| Friday | 8-12 | 1345 | 2330 |
| Saturday | 8-13 | 1815 | 0400 (Sun) |
| Sunday | 8-14 | ----- | ----- |
| Monday | 8-15 | 0125 | 1220 |

TEAM SCHEDULES (Continued)WHITE TEAM

| | | <u>START</u> | <u>END</u> |
|----------|------|--------------|-------------|
| Thursday | 8-11 | 1845 | 0430 (Fri.) |
| Friday | 8-12 | 2315 | 0900 (Sat.) |
| Saturday | 8-13 | — | — |
| Sunday | 8-14 | 0345 | 1450 |
| Monday | 8-15 | 1205 | 2310 |

BLUE TEAM

| | | | |
|----------|------|------|-------------|
| Friday | 8-12 | 0415 | 1400 |
| Saturday | 8-13 | 0845 | 1830 |
| Sunday | 8-14 | 1435 | 0140 (mon.) |
| Monday | 8-15 | — | — |

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LO BUGL

Date 12 August 1966

Number 5

ACQUISITION AID?

At press time the BUGL understands that there's a steak dinner riding on success of Canopus acquisition by the RED team. The bet is between a mission advisor and a Boeing "lead man."

UNASKED QUESTION ANSWERED

For the four people who passed lovely Kathy Bauman at the Reception Desk yesterday and did not ask, "What happened to your eye?" here's the answer. She lit a match and the burning tip flew into her eye. We're glad to add that there doesn't appear to be any permanent damage.

FPAC PROGRAM NOTE

Option switches for TRJL

If TRJL hangs up there are two switch options that can be tried.

- 1) Enter "NO" switches to TRJL. This will cause TRJL to exit, and then can be turned on again.
- 2) Enter switch 35. This will cause TRJL to request cards.

If this does not work - Good Luck.

MIDCOURSE SUCCESS

According to the latest OD (Orbit Determination) the first midcourse maneuver was very successful in the sense that a second midcourse is not necessary, and further that the injection maneuver will result in an extremely good initial ellipse. More on this in the next issue.

MESSRS SASSO & CONSTANTINO PLEASE NOTE:

The solar panels aboard the L.O. continue to provide plenty of power to spare. The resistors were called upon to dissipate about 206 watts of excess power over periods of many hours because the spacecraft was held on the sun all during maneuvers to test the Canopus sensor. What a waste -- all that power going to increase the entropy of the universe.

SPAC SPECIALS

Who stole SPAC photo specialist Ralph Deltenre's Tiki from his intercom console? He claims the loss is responsible for the bad luck of the Canopus tracker. Its substitute, a martini pick, has not been effective.

SFOG REPORTS

To continue recognition of "community support" of the L.O., we note that the girls at the Saga have been posting status reports. They call themselves the SFOG (Saga Front Office Gale) and obtain the "pipeline information" from SPAC computer specialist Dennis Doe. Also, the radio announcers seemed to know our midcourse correction was successful before we did.

FINANCIAL REPORT

To save some of our valuable and talented SPAC analysts from the pain of an empty wallet, Claudia Wickersham of the Boeing office made a midnight trip to the Lab from her home last night. She couldn't get the money to the guys any other way so she buzzed in from home while Buddy de Ryder's wife "Joey-sat." Hate off to Claudia! And just for your info, she'll go up the ladder to Bill Allen if it's necessary to get money for you -- if you have turned your expense reports in properly.

THE BUGL HONKS AGAIN

Yesterday's BUGL credited Larry King with the vocal during the countdown. It should have been Jack King, though Larry is also in the PIO loop -- at the Von Karman auditorium.

VENDING MACHINES

Someone suggested we "poll the delegation" to see how many people like what goodies from the nickel-grabbers. So if you'd like to vote for your favorite item(s), fill out the tear slip and put in the BUGL box (Jack Sutherland's). We'll pass it along to the vending machine operator.

Cut or Tear Here

My favorite vending machine items are:

Ice Cream

50-50 Bar

Ice Cream Sand.

Vanilla Bar

Other (specify)

Candy

Oh Nuts

America's Finest Jellies

Tootsie Rolls

Shortbread

Cashews

Peanut cluster

Peanut Butter cheese
Sandwich

Hersheys with almonds

Mintdent

Cinadent

Charms

Pastries

Buttermilk Twist

Apple Turnover

Coffee Cake

Jelly Roll

Tea Cake

Donut

Pecan Roll

Flaggs Donut

Other (Specify)

Comments:

SUGGESTION SYSTEM

"SUPPORT CHIEF should ask Mr. Bilbo of JPL to have a coin changer installed outside of the FPAC area." What's the matter, Bob? Doesn't the FPAC talent for orbit prediction extend to predicting need for pocket change?

BUGL FLOWS FOR SOFTWARE PEOPLE

Skip Newhall, in a call to Jan Charnell the other day, expressed his thanks to all the Boeing people who helped put together our software system. Jan says he'll second that motion: a lot of programmers and analysts put in many hours debugging, integrating, and demonstrating the software and, it appears, did an excellent job.

While we're at it, let's also thank the DSN and NASA people who either contributed directly to the effort or goaded us into meeting our schedules.

DICK TRACY, PLEASE HANDLE

One of the girls in the ORS (Official Record Station) in Seattle suggested that the reason the tracker locked on the moon was that one of the moon men left the light on in the men's room.

HELBERG DISAPPOINTED?

Two Seattle people said it so it must be true, Bob Helberg was reportedly displeased over results of the midcourse maneuver. Seems we were 3 inches off course at the time. Sorry about that, Chief.

MOTHER HUBBARD SAYS:

Like to nibble? Me too, but here's a little appetite spoiler:

| <u>THE NIBBLE</u> | <u>APPROXIMATE MILEAGE TO "WALK IT OFF"</u> |
|--|---|
| 1 Piece Chocolate Cake with icing, 2 layers, 2-inch sector. | 5.3 Miles |
| 1 Piece Mince Pie, 4-inch sector. | 4.5 Miles |
| 1 Doughnut, 3-inch Diameter | 4.0 Miles |
| 1 Ice Cream Cone with $\frac{1}{2}$ Cup Ice Cream | 3.7 Miles |
| 1 Sliced Ham Sandwich | 3.6 Miles |
| 1 12-ounce Can Beer | 2.2 Miles |
| 1 inch square of Chocolate Fudge, $\frac{1}{2}$ inch thick | 1.3 Miles |
| 8 - 10 Potato Chips | 1.3 Miles |
| 1 Coca Cola | 1 Mile |

Depressing, isn't it?

SCHEDULES

One of our good looking young single men asked why we couldn't issue a schedule for a couple of weeks into the future so he could plan his social activities in more detail. We can - but we might have to perturb it after deboost so we thought we'd wait till FPAC has some good predicts after deboost. Deboost is early Sunday morning, by the way. Would you believe 8:24 A.M.?

In case yesterday's HUGL is already locked in the vault, here are the team schedules thru deboost plus about 36 hours.

| <u>RED TEAM</u> | | | <u>WHITE TEAM</u> | | <u>BLUE TEAM</u> | |
|-----------------|--------------|-------------|-------------------|------------|------------------|-------------|
| | <u>Start</u> | <u>End</u> | <u>Start</u> | <u>End</u> | <u>Start</u> | <u>End</u> |
| Sat. - 8/13 | 1815 | 0400 (Sun.) | 2315 (Fri) | 0900 | 0845 | 1830 |
| Sun. - 8/14 | - | - | 0345 | 1450 | 1435 | 0130 (Mon.) |
| Mon. - 8/15 | 0125 | 1220 | 1205 | 2310 | - | - |

There are also bar chart schedules available which show the same general info. Call Jack Sutherland at the Boeing trailer for a copy.

HOT FLASH!!!

Present plan to acquire Canopus is:

1. Pitch up 36° to reacquire Sun.
2. Prepare star map and antenna map for reference use.
3. Rotate S/C to vicinity of Canopus and rotate ^{at the rate} ~~by steps~~ of .05° per sec. while watching for a voltage peak of the proper magnitude.
4. Conduct a "bright object sensor" test by rotating within 45° of the sun to see if the sensor will reduce the indicated voltages to normal levels.
5. Repeat step 3 but turn tracker off and on during the ^{rotation} ~~stepping~~ operation.

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LO BUGL

DSS 41

Date 13 August 1966

Number 6

NASA - BOEING - JPL

PASADENA EDITION



DSS 61



DSS 12



Art Contribution by—
Tommie Thompson
Pinkerton Guard

EVER WONDER WHY WE HAVE TROUBLE WITH GMT?

DEBOOST MANEUVER PLANS

Now that we've concluded the preliminary Command Conference we can summarize plans for the Deboost Maneuver. This is the maneuver that puts the spacecraft into initial orbit by slowing it down so it is captured by the moon's gravitation.

The nominal (desired) position at approach and the actual position will be approximately 46 km (23 miles) apart which is essentially right on the button. The deboost maneuver will occur at 226 : 15 : 34 : 43 (8:35 am PDT Sunday). Velocity will be reduced by 790 meters per second by a ten minute burn of the 100# thrust Marquardt rocket engine. We expect to have a fairly accurate roll reference using either the Canopus tracker or the High Gain Antenna. Assuming we do have a good roll reference and a good burn, the initial ellipse should be very near nominal. The spacecraft will complete an orbit every $3\frac{1}{2}$ hours and will be left in the initial orbit for 8 days.

This period is required for the spacecraft to pass over the target at the proper illumination angle - - - and to give the OD(FPAC) types time to solve for lunar gravitational harmonics (LHDL program).

The first actual photo sequence (Site A0) is planned for the 4th day of the initial orbit, August 18th.

OUTPUT DUPLICATION

Currently all output from the 1403 and the SC-4020 is microfilmed for historical record purposes. For the next mission let's consider deleting the requirement for duplicate outputs from the 1403 and SC-4020. Because we get the 1403 data faster, let's delete the SC-4020 output if it is a duplicate (i.e. duplicate print output). We can eliminate some of the mountains of paper for both FPAC and SPAC. You'd also see faster processing on the remaining SC-4020 output. See Mal Gray if you have any questions. But let's don't rock the boat now.

CANOPUS WORN OUT

John Sheehan, SPAC Photo Analyst, says the reason we had some difficulty with Canopus acquisition is that we wore it out during all that simulation training!

CRUISE VICTIM

Rodger Shepard, Crew Chief, stood on the bow of the "Island Holiday" in his swim suit for the windy trip home and ended up with a badly sun/wind-burned lower lip. My Mother-in-law used to advise her daughters how to avoid chapped lips. "Keep the little chaps off your lips." That doesn't help Rodger though.

MOTHER HUBBARD SAYS:

Anyone know what a calorie is? I'll bet you think it is the demon of the overweight and the darling of the diet food industries, but of no possible interest to all you nice, handsome, intelligent, healthy people.

How about this: "A calorie is the amount of heat required to raise one gram of water one degree centigrade." (The book doesn't say how large is a gram!)

Now why did you think this was going to be a lecture on the importance of regular and well balanced meals? Guilty conscience?

WANTED - By young Air Force "General"

Information leading to whereabouts of a certain piece of string.

BUREAU OF MISSING PERSONS

Mrs. George Hage and family. Last heard from just before they left the Cape for Pasadena by car. The phone number they have for JPL has been disconnected. Anyone receiving a call from a lady with a warm friendly voice who wants to speak with George please do three things: 1) Get her name, location and phone number. 2) Transfer her call to 7878 (dial 1-7878) or have her call the Westerner Hotel, Arcadia, 447-3501. 3) Notify the BUGL editor at 6464 or 5950. (Ed. Note: I considered omitting step 2 but since George is the L.O. Engineering Manager - - - - -.)

UNIVERSAL CITY STUDIO TOURS

9 A.M. thru 5:30 P.M. Lankershim Blvd. at Hollywood Freeway. Phone 877-1311.

If you think Catalina was rough on the eye-balls, try this one on your day off!

MADRID FIRE

Art Sheppard, DSIF Manager, said the DSS 61 folks had a little excitement recently when a forest fire burned a track past the collimation tower. No damage to DSN equipment.

SCHEDULE -- BALL PARK TYPE

In spite of technical problems, we are going out on a limb (of the moon?) and include an extended schedule in today's BUGL. The press of various social activities is too great to be met by mere orbital constraints and we aim to satisfy the multitudes. So here it is. Times are PDT and include 15 min. briefing. Expect changes as we have more precise info.

| | | <u>RED TEAM</u> | <u>WHITE TEAM</u> | <u>BLUE TEAM</u> |
|------|--------|-----------------|-------------------|------------------|
| 8-14 | Sun. | ----- | 0345 - 1450 | 1435 - 0140 |
| 8-15 | Mon. | 1205 - 2310 | 0125 - 1220 | 2255 - 1000 |
| 8-16 | Tues. | 0945 - 2050 | 2035 - 0740 | ----- |
| 8-17 | Wed. | 0805 - 0510 | ----- | 0725 - 1820 |
| 8-18 | Thurs. | 0545 - 0250 | 0455 - 1600 | ----- |
| 8-19 | Fri. | ----- | 0235 - 1340 | 1125 - 0020 |
| 8-20 | Sat. | 0105 - 1100 | 1045 - 2130 | 2115 - 0800 |
| 8-21 | Sun. | ----- | 0745 - 1830 | 1815 - 0500 |
| 8-22 | Mon. | 0445 - 1530 | 1515 - 0200 | ----- |
| 8-23 | Tues. | 1211 - 2300 | ----- | 0145 - 1230 |
| | | | | 2245 - 0930 |
| 8-24 | Wed. | 0915 - 2000 | 1945 - 0630 | ----- |
| 8-25 | Thurs. | 1645 - 0330 | ----- | 0615 - 1700 |
| 8-26 | Fri. | 1345 - 0030 | 0315 - 1400 | ----- |
| 8-27 | Sat. | 2115 - 0800 | 0015 - 1100 | 1045 - 2130 |

After this was typed, we re-calculated earthset based on the latest data, and find that all times should be adjusted 1 hour 50 minutes earlier. That is, a shift listed above as starting at 1435 should actually start at 1245. We will issue a corrected schedule tomorrow. Till then - stay loose!

SEE
NOTE
BELOW

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document

LA BUCAL

Date 14 August 1966

Number 7

NASA - BOFING - JPL

PASADENA EDITION

ORBITER SCORES AGAIN!

A near-perfect deboost maneuver has added another feather to the already stretched cap of the Flight Operations team. The actual velocity error was about 8 inches per second which is less than 1/2 mile per hour and that's right on the button in anybody's ball game. You don't even score a ZD if you're that close. Admittedly it takes some of the glory away from the mission advisors because their alternate mission plans aren't required—but Ed Brummer says they're all happy as a clam at high tide anyway. Good show, troops.

Next major event is Readout of test film which will occur just after 8 a.m. tomorrow morning.

AUDITORIUM ADMISSION

Stopped by the von Karman Auditorium today for the scoop on getting wives and families in to see Spacecraft "C" and the Sun/Moon/Orbiter display. The word is—it's OK except during periods of peak press activity when all the wheels are there. Show your SFOF badge to the receptionist or identify yourself as a member of the Orbiter team and escort your guests in for a look. Another hint—don't pass the word too widely because here in the LA area they can create a crowd of people at the sound of a siren or the drop of a baseball.

TRAVEL EXPENSE REPORTS (TBC)

Cost of buying travellers checks is not an allowable expense item.

THE DEVIOUS ROUTE OF THE BUGL

One SPAC Photo Analyst has been sending copies of the BUGL back to girlfriends in Seattle. This keeps the troops up to date. It seems one gal works at KING-TV. So where does the BUGL wind up--the KING news room. This turns out to be quite useful. Many LO wives, family and friends, unable to get much information from Boeing Seattle, have been calling KING news. Is there perhaps a moral in all this? Yes. The KING news staff requests you to call your wives now and then!

DOSIMETER READS RADS

As our "travelling salesman" passed through the Van Allen radiation belt the dosimeter for the camera film cassette was turned on and now indicates that the film has been exposed to 1.0 rads from incoming charged particles from the sun, roughly equivalent to a mild case of sunburn for an unshielded man, but not significant from the standpoint of damage to film in the cassette. A dosimeter with less shielding was turned on after passage through the Van Allen belt to measure radiation at the camera looper and hasn't received a measurable dose yet. Solar flare activity is expected to remain low during Mission A, simulation training notwithstanding.

BUGL POINTS THE FINGER

After all the problems of cafeteria scheduling were "resolved" last week and the "firm" schedule was issued by Gordon Boles, JPL (see Cafe bulletin board) another memo was written Friday by Walt Teilmann, JPL which caused a number of us to go hungry Saturday and Sunday nights. The dinner and breakfast hours were cut so there's an 8 1/2 hour gap when no food is available--and the machines are sold out too. Don't know the reason yet but we're making some waves. More on this later.

MOTHER HUBBARD SAYS

Drunkenness is hard on the wife and kidneys.

PERSONNEL ROSTER (TBC)

There's a new one out, thanks to Virginia and Katie. I see Bob Helberg and Tom Yamauchi made the team this time. But how about our eminent astronomical consultant from the University of Manchester (England), Dr. Kopal?

DECISION PROCESSES

Mission Adviser Tom Young has a new use for the MA decision making apparatus (dart board). He uses it to decide when to go home. If he can't hit the thing at all -- he goes home.

EARLY RISERS

To make you feel better about missing all that sack time watching the Lunar L^ocker, you had company this morning--Dr. Pickering at JPL and Lysle Wood and George Stoner at Seattle. Bob Helberg and Cliff Nelson were here in the early hours too, as were the Deboost Experts of the White Team.

ANOTHER TOM SWIFTY

At dinner tonight a NASA Mission Advisor commented to Tom Yamauchi, "I'll bet you're really pleased with the success of this mission so far!" Tom swiftly replied, "yes, and I hope the honorable customer is too."

SCHEDULES

Even the scheduling is now being done by computer. The LIFL program produces earth-set times for the middle of the Earth (Latitude, longitude, and radius = 0) and we extrapolate from the end of the LIFL printout. Expect more perturbations as we get more data.

| <u>Date</u> | <u>Red Team</u> | <u>White Team</u> | <u>Blue Team</u> |
|-------------|-----------------|-------------------|------------------|
| 8-14 | ----- | 2335 - 1045 | 1245 - 2350 |
| 8-15 | 1030 - 2140 | ----- | 2125 - 0830 |
| 8-16 | 0815 - 1930 | 1915 - 0620 | ----- |
| 8-17 | 1655 - 0350 | ----- | 0605 - 1710 |
| 8-18 | 1425 - 0130 | 0335 - 1440 | ----- |
| 8-19 | 2255 - 0940 | 0115 - 1220 | 1205 - 2310 |
| 8-20 | ----- | 0925 - 2010 | 1955 - 0640 |
| 8-21 | ----- | 0625 - 1710 | 1655 - 0340 |
| 8-22 | 0325 - 1410 | 1355 - 0040 | ----- |
| 8-23 | 1055 - 2140 | ----- | 0025 - 1110 |
| | | | 2125 - 0810 |
| 8-24 | 0755 - 1840 | 1825 - 0510 | ----- |
| 8-25 | 1525 - 0210 | ----- | 0455 - 1540 |
| 8-26 | 1225 - 2310 | 0155 - 1240 | ----- |
| | | 2255 - 0940 | |
| 8-27 | 1955 - 0640 | ----- | 0925 - 2010 |

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LOOKS BLUICAL

Date 15 August 1966

Number 8

NASA - BOEING - JPL

PASADENA EDITION

GRANDPA PETTIBONE SAYS

After hot-rodding our spacecraft around the sky for the past four days, it is becoming more and more apparent that we're flying a smooth-working Cadillac. Seems, therefore, that we should settle back down to using those safe-driving practices which we developed during our training. Would you believe the importance of

Good Voice Procedures?

Smooth Watch Handovers?

Following SEAL Script?

Preparations for Command Conferences?

Accurate Logging and Reporting?

Area Access Control?

Flight Team Organization and Discipline?

Let's tighten our safety belts before the next time around - the moon that is!

DID YOU KNOW?

A factor greatly involved in the success of the photo sequences and film processing is the constant monitoring of solar particle events and radiation dosage? Unknown to many people, is the large network of facilities and people that make this monitoring possible. To name a few, the Institute for Telecommunication Sciences and Aeronomy (ITSA) of the Environmental Sciences Service Administration (ESSA), which provides a communication network for solar observations obtained by about 100 different observatories throughout the world; Pioneer 6 experiments; University of Chicago; and the radiation experts from NASA/Langley and radiation analysts on the SPAC Team from Boeing. These people maintain continuous surveillance in order to advise on special sequences of film processing in case of a solar particle event.

NCR ORPHANAGE HOME CAMPAIGN

It seems that failure to enter all runs in the Flight-2 Log has caused quite a number of orphaned NCR printout runs in the FPAC area. Consequently, there is a large brood of 'orphans' who have no homes and are far from legible. In order to eliminate the problem of the homeless fellows, let's acquire a motherly instinct and carefully log all of the defenseless tykes and permit them to live happily ever after in the "FPAC Orphanage Home for Wayward NCR's"! ! ! ! !

DETERMINATION OF LUNAR GRAVITATIONAL HARMONICS

Our prime purpose for the next 6 or 7 days is the determination of lunar gravitational harmonics, with little tolerance for interfering influences. Accordingly, it is requested that the random and frequent maneuvering such as occurred during transit to the moon be eliminated. These maneuvers should be deferred from deboost through site A0 photos and following site A0 photos. In the event that a maneuver is required, consult first with both the online FPAC-OD group and the offline LND group. (Ed. note: FPAC wants to have all the fun!)

FIRST PHOTO READOUT

The readout system successfully transmitted the pre-exposed, pre-processed portion of the film back to earth. SPAC Photo Acquisition Specialist Lee Helser claims that the squiggle on one frame of readout is the shadow of a piece of dust accidentally exposed here on earth on the Goldstone test film. The system operation looks good.

BOEING NEWS MISSING BUGL?

Crew Chief Jim Brossard complains that The Boeing News in the last issue seemed unaware that a large Boeing team is involved in "flying" the L.O. from the SFOF here in Pasadena. (Ed. note: Ken Calkins, Boeing News Chief, will be pleased(?) to have a bundle of BUGL's on his front stoop when he returns from vacation next Monday!)

OVERHEARD - On the OVCS

"Be advised that the camera system is really silver, not 'green'!"

FAMILY NIGHT

For those off-shifters who would like to see Spacecraft C, the von Karman auditorium will be open to you and your guests Tuesday night 7 to 10 p.m. We plan to have copies of today's test film pictures available for you to see. Bring your cameras but just don't handle the merchandise. See you there. Addenda: Please keep the small fry out of the enclosed area!

IMPORTANT DISCOVERY AT THE SFOF

It was recently discovered that there are more goodie machines around than those in the vicinity of the SPAC and FPAC areas. In case all you thirsty and hungry individuals run to the machines and alas, they are like a broken record - SOLD OUT - fear not! A trusty little spy has turned up these interesting locations where thirst and hunger may be vanquished! (You will be permitted with your green SFOF badges.)

Second Floor So. E (Close to front stairway)

Cigarettes and Coffee

(Around the corner to So. I)

Candy and Pastry

Basement (Near elevator)

Hot food and Candy

Third Floor - E (Near elevator)

Cigarettes and LCandy

CREDIT WHERE CREDIT IS DUE

Your editor was remiss in failing to acknowledge in yesterdays BUGL the vital contributions by all operations teams as well as by many colleagues at Langley, Seattle, the Cape and Deep Space Stations who were not able to enjoy the ringside seat provided by the SFOF. Am I forgiven?

CHARACTER STUDY

What's this we hear about SPAC Directors being forbidden to read telemetry data from the teleprinters until they take a short course on how to correctly interpret the characters?!!!!

CAFETERIA SCHEDULE

We're set with the published schedule through Friday and Walt Teilman, JPL Employee Service Chief, has assured us that the schedule will not be changed without contacting us first. This conversation led into one with Gordon Boles, JPL, about vending machine servicing and a subsequent tour with Gordon through the SFOF during which he told of the time he and his wife went for an evening swim at a well known Arcadia hotel. Seems they were in the deep end and a \pm 20 year old girl was swimming about in the shallow end. It wasn't till she got out of the pool and walked upstairs to her room that Gordon realized she had "forgotten" her suit. So he's still working the vending machine problems! (Ed note: We buried the story here so you wouldn't read it!)

SPAC SIGHTEN

On Huntington Blvd. a sign: "M.D. Couch, Psychiatrist"

FLASH:

Boeings Eddie Cotton challenges Torres for the Light Heavyweight crown tonight in Las Vegas. Good luck, Eddie.

SCHEDULE INFO

No change since yesterday's BUGL. Times given are PDT and include the 15 minutes briefing session.

Did'ja see that
news release about the
JPL-Langley-Eastman-RCA Lunar
Orbiter?

...
Flight Chief

Yeah, and I'm certainly
impressed with the fine job
those folks did ... wonder who
built the spacecraft?

...
Spacecraft

End of this
document

NASA L.O. BEING BU GL VP

LOS ANGELES - HOME OF THE DODGERS, THE STARS & THE MOON MEN

August 16, 1966

PASADENA EDITION

Number 9

STAFF: Editor: Jack Sutherland, Schedules

Assoc. Ed: Leo Daspit, Mission Advisor

Assoc. Ed: Dalton Webb, SPAC

Assoc. Ed: John Thomas, SPAC

Assoc. Ed: Dale Shellhorn, FPAC

Maurie Wilkinson, SPAC

GRANDPA PETTIBONE SAYS:

The big day is approaching when we expect to receive some of the most revealing pictures of the moon Man has ever seen. These pictures will help to expand the knowledge gained from the detailed close-ups sent back by Surveyor by extrapolation to other areas of the moon. And this means publicity - and lots of brass all around. Would you believe the importance of

Neat and clean work areas?

Appropriate dress?

Business-like demeanor?

Prompt disposal of excess material?

A civil tongue even though you're dog-tired?

So let's shape up and shine --- in our appearance as well as in our performance.

FAMILY NIGHT A HUGE SUCCESS

For a spur-of-the-moment get-together, we had quite a turnout. More than 75 people saw the spacecraft and many took advantage of the occasion to take pictures of a real live spacecraft. The E-K people were there in force using Kodak film in Kodak cameras (mostly). Wonder if we could get a discount on a new 727. But back to facts, man. We were happy to have SPAC's Ken Burrill's in-laws as our guests and since they'll be returning to England tomorrow they may be the only people there who have seen the Orbiter since one was launched. Dr. Kopal of Manchester is still here, you see. Yes sir, Mr. & Mrs. Pernan will really be celebrities. Oh yes, we had a number of Boy Scouts from the JH sponsored troop aboard for a few minutes too.

TRAVEL ADVANCES (TBC)

If you need travel advance money, please see Ken Essmeier before 11 a.m. That way he can obtain it from Seattle and have it ready for you the next day.

BOEING NEWS ON THE WAY

Thanks to Claudia Wickersham, we'll be able to see the Boeing News account of the LO mission this week. She had them on order before any of the rest of us thought to mention it to her. That's what we call an efficient mindreading type of secretary. By the way, those of us who were teed off by lack of a white badge for the 2nd floor of the SFOF can take solace from the fact that some of our veteran Boeing News types haven't even wangled the green badge yet and can't get in where the action is. Guess they'll have to rely on the BUGL.

KRAFFT WATCHES KRAFFT WATCHING CRAFTY CRAFT-WATCHERS TILL 2.

The BUGL's Seattle reporter advises that L.O. Business Mgr. Carl Krafft had a dinner date with Mrs. Krafft last Friday night that he postponed till 8:30 p.m. because he couldn't break away from the L.O. Operations Room in Seattle. He must have talked "shop" all during the hurried dinner because Mrs. Krafft insisted on going to the Ops. Room with him after dinner. To make a long story short, he couldn't get her to leave the place till 2 a.m. because she was fascinated by the activities. (Ed. note: Wonder if she had a green badge?)

NOTE TO THE BOSS

Your clearance is on file at the JPL gate, Mr. Allen. It was listed as W.H.Allen but we had them fix it. And your green SFOF badge is ready too, but it won't get you onto the second floor where the computers are. If you have a real need to get into that area, ACE TWO may be able to swing it.

BUREAU OF MISSING PERSONS

Mrs. Hage has been located. She and her three children arrived safely three thousand miles and three flat tires after they left the Cape. Another example of BUGL action. We said she was missing and she found us.

NICKNAMES AND COOKIE DUSTERS

Patti Pierson is occasionally known as "Goldfish" these days. An unidentified male type in FPAC is called "Candy" because of his elaborate preparations in case of a closed cafeteria or tired goodie machine. Ed Protzeller is sporting an hirsute adornment.

RED CARPET?

Overheard a comment about the Seattle Ops Room that mentioned the red carpet treatment. Is that literal or figurative?

SICK LIST

Harriet Rounaley FPAC, hurt her hip and Axel Mattson of the "Voice of L.O." operation caught a bug of some sort. Reports indicate that both of them are on the mend and will probably be with us again tomorrow. Get better fast, troops. We need you!

WANT AD DEPT.

John Newcomb, Mission Advisor, asked us to run an ad to locate his spectacles which were misplaced during or following the injection maneuver. He found them a little while ago so we won't have to run the ad. That's BUGL service for you, John.

SST PROPOSAL DEADLINE NEAR

Phase III proposal is to be submitted in less than four short weeks. After we get some good pictures from the low orbit next week, let's wish the SST team some of our good luck, huh? As Mr. Allen says, "Only the best can place first." And since good luck is what happens when opportunity meets preparedness, let's hope they're well prepared because the opportunity is almost here.

CHRISTIAN SCIENCE MONITOR

August 12 edition carried two articles which caught our eye. The first was as accurate a description of the L.O. operation as we have seen - probably because they talked with Mission Director Jim Martin and apparently listened to what he said. The second was about an "Alice-in-Wonderland" exercise called a "non-test". They get all geared up for a big ^{nuclear} test and then don't press the button. Don't we call that "simulation training"?

OVERHEARD

On the OVCS net; "Be advised that the camera system is really silver, not 'green'."

KLUDGE (KLOOGF)

This device is the brainchild of an ingenious engineer, usually fabricated in a very short span of time and from whatever materials are available to do the job. There are several of these creations in the SFOF ranging from the exotic Flight Programmer-Engineering Breadboard to lesser plastic and wire contrivances which almost fall into the category of contraptions. A device which has the ignoble title of "Interface" is the subject of tonight's discourse. The more complete term "Scan Converter Interface" is actually more descriptive as the gray electronic marvel takes video type data from

the GRT at Goldstone via microwave and transposes the signal into one which can be picked up by a conventional TV circuit. The end product is a strip picture which tells us whether we are getting a good picture and at the same time will serve to get something to the news media "direct from the moon". This kind of publicity can be most helpful in convincing the "man on the street" that there are some good and sound reasons he should support the nation's space programs. He can see what he's paying for and know at once with his own eyes whether it's any good or not. And let's make it good! So much for the subject of "kludges" tonight. Be advised that other fantastic devices will be mentioned in the future.

SCHEDULES

Latest LIFL perturbations to the schedule follow plus a 25 minute change so that watch changeover will take place during - instead of at the beginning of earthset. All times given are PDT and include the 15 minute briefing. You'll note that we have adopted the Shepard style of indicating date changes during a shift.

| | <u>Red Team</u> | <u>White Team</u> | <u>Blue Team</u> |
|------|-----------------|-------------------|------------------|
| 8-16 | | 1915 | |
| 8-17 | 1655 | 0620 | 0605 - 1710 |
| 8-18 | 0350 | 0335 - 1540 | |
| 8-18 | 1525 | | |
| 8-19 | 0230 | 0215 - 1330 | 1315 |
| 8-20 | 0015 - 1100 | 1045 - 2130 | 0030 |
| 8-20 | | | 2115 |
| 8-21 | | 0745 - 1830 | 0800 |
| 8-21 | | | 1815 |
| 8-22 | 0445 - 1530 | 1515 | 0500 |
| 8-23 | 1215 - 2300 | 0200 | 0145 - 1230 |
| 8-23 | | | 2245 |
| 8-24 | 0915 - 2000 | 1945 | 0930 |
| 8-25 | 1645 | 0630 | 0615 - 1700 |
| 8-26 | 0330 | 0315 - 1400 | |

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LABOR

August 17, 1966

Pasadena Edition

Number 10

STAFF: Editor: Jack Sutherland, Schedules

Assoc. Ed: Dalton Webb, SFOD

Assoc. Ed: Dale Shellhorn, FPAC

Assoc. Ed: Gerry Brewer, Mission Advisor

Assoc. Ed: John Tomas, SPAC

Kaurie Wilkinson, SPAC

FIRST PHOTOS DUE TOMORROW

At approximately 7:43 tomorrow morning, PDT, the first actual photo sequence will begin as the entire spacecraft is put through its paces. Picture readout will take place just after 12:30 P.M. and we should have the "quick-look" results almost immediately from the "Scan Converter Interface" we described yesterday. Jim Kennedy and Dennis Wood will focus their Polaroid on the scope, process the picture, and pass the word along. Many others will also be in the photo loop in various capacities, including Ralph Gunn and Walt Locke who will insure safe arrival of the GRE film to JPL from Goldstone via airplane, helicopter and special cars and will then construct at least part of a photo mosaic. News coverage will undoubtedly be concentrated.

COEFFICIENT CONFUSION

Soon the scientists will have something better than conjecture to describe the small distortions in the moon's gravitational field. Those distortions are tweeking the L.O. orbit right now and the tracking shows it. There is enough information latent in the tracking data already obtained to give a preliminary "mathematical model" of the situation and FPAC is trying desperately to decode it. They need this "moon model" to predict the accumulated influence of all this orbit tweeking. This prediction will guide the refinement of our final photo orbit design and the choice

of a maneuver to transfer the Orbiter to this lower orbit. Decoding the secret message hidden in all that tracking data is a tough job that takes gobs of computer time. Thanks to the cooperation of Ops Con and the Surveyor & Pioneer projects, FPAC has access to two 7094 computers most of the time. Two computer programs are being used to double-up the chances of solving the riddle. One is LHDL being run by Joe Benezra, Earl Mignesault, Dave Van Zandt, and Tom Blackshear. They work upstairs in the computer areas. The other program is the regular ODFL being run by the regular FPAC Orbit Determination team, working under the direction of Matt Grogan. In addition, there's a dedicated group at Langley working on it so we should get the answer somehow. Tune in next week for more information.

TOMS ON VOICE OF AMERICA

Vanessa Brown, former movie star and now an interviewer for the VOA, was fortunate enough to be granted an interview by two of our distinguished Toms - Costello and Yamauchi - . They played hard to get for about 0.2 seconds and then consented to the interview.

PRESS, TV, AND RADIO CORNER

Many of the big names in the news business will be here in the next few days. Jules Bergman has already checked in with an ABC team and we understand the NBC team has reservations at the same motel as FPAC's Bob Smith. On a slightly more technical level, NBC has asked if we could also furnish the sound from which the the GRF picture is made. We hear that the request has been turned over to the folks at the Von Karman auditorium to see if they can supply bleeps at the appropriate time. ("Those bleeps are coming to you live - from the moon.")

JAM SESSION FEARED

The Seattle Operations Room and the MPC Theater are reportedly the targets of several large crews of TV people. Some of the project people are concerned that there won't be space for everyone.

TRACKER STATUS

"Tracker takes a whackin' and keeps on trackin'," according to Mike Anderson. "Last time we turned it on it made a good star map and checked out OK. However we're

MAIL BOXES

Mail slots for the NASA people are all set up next to the Boeing mail stop.

trying to restrict the "on" time to a minimum so we'll have it available when we need it."

"Tomorrow we may start testing the tracker from S/C "C" in the JPL tracker lab. to work up a "stray light sensitivity pattern."

OFFICIAL NOTICE???

This unsigned note was left in the BUGL box.

"Special area access badges (non-personalized).

All personnel are reminded that special area access badges (non-personal type) are not to be removed from the building. These badges provide access to the second floor and are very limited in number. Personnel are directed to return the badges to the Control Room as soon as they have finished their business so that the badge may be available for other users. A few analysts have already been embarrassed and inconvenienced by forgetting to return the badges before going off shift. If anyone forgets to turn in a badge he can expect a call from his friendly ACE-2 to return the badge at once on his own time - a time he may well need for rest."

(Ed. Note: This sounds official and reflects previous policy statements but no ACE-2 would sound friendly if he interrupted a sound sleep. However, we have only a few of the special badges and can't let them get away from the lab.)

LANGLEY CHIEFS HERE TODAY

Dr. Floyd Thompson, Director of the Langley Research Center of NASA and E. C. Draley, Asst. Director, arrived today for discussions relative to the photographic portion of the Lunar Orbiter Mission "A". Welcome aboard, gentlemen.

NEW BUGL STAFF MEMBER

NASA's Gerry Brewer has accepted the post of Assoc. Ed. of the L.O. BUGL for the Mission Advisor's Area without even having his arm twisted.

DALTON'S DQME?

Looks like we may go after some back side photos - and a lot of things back there haven't been named yet. - Would you believe - Art's Alps?, - Grenard's Grotto? - Mt. Martin? - Thompson's Towers? - Migneault's Molehill? - Tabacka Road? - Ladder of Rungs? - Hage's Hills? - Mare Gravum? - Allen's Valley? - Oceanus Helbergil? - Boyer Peninsula? - Cliff Nelson?

SUPERCHIEF

Duane Nelson, Support Chief-Chief is the one to whom we doff the editorial visor tonight for finding a "kitty" of generous proportions to support the coffee urns and help us stay vertical. He and his people have kept the coffee flowing without a hitch since we started Mission A. - By the way, Duane, are enough fishing worms raised hereabouts to create a market for used coffee grounds? -

SCHEDULE INFO ON SEAL

Dave Campbell is trying to work the watch change schedule into the SEAL program. Otherwise no change from the schedule in yesterday's BUGL. But here tis anyway.

| | <u>RED TEAM</u> | <u>WHITE TEAM</u> | <u>BLUE TEAM</u> |
|------|-----------------|-------------------|------------------|
| 8-17 | 1655 | | |
| 8-18 | 0350 | 0335 - 1540 | |
| 8-18 | 1525 | | |
| 8-19 | 0230 | 0215 - 1330 | 1315 |
| 8-20 | 0015 - 1100 | 1045 - 2130 | 0030 |
| 8-20 | | | 2115 |
| 8-21 | | 0745 - 1830 | 0800 |
| 8-21 | | | 1815 |
| 8-22 | 0445 - 1530 | 1515 | 0500 |
| 8-23 | 1215 - 2300 | 0200 | 0145 - 1230 |
| 8-23 | | | 2245 |
| 8-24 | 0915 - 2000 | 1945 | 0930 |
| 8-25 | 1645 | 0630 | 0615 - 1700 |
| 8-26 | 0330 | 0315 - 1400 | |

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LABORAL

August 18, 1966

Pasadena Edition

Number 11

STAFF Editor: Jack Sutherland, Schedules

Assoc. Ed: Dalton Webb, SFOF
Assoc. Ed: Dale Shellhorn, FPAC

Assoc. Ed: Gerry Brewer, Mission Advisor
Assoc. Ed: John Thomas, SPAC
Maurie Wilkinson, SPAC

L.O. CONTROL SAYS:

Resolution of about 14 feet from an altitude of 133 miles above the surface. The photo analysts add that adjustments in gain for the second readout improved picture quality and we should get even better as we get more familiar with the details. What more can we say? - One visitor who was trying to locate the SFOF asked some workmen where the spacecraft control center was located and was told, "I don't know. Ask one of those happy people over there."

!!!! NEWS FLASHES !!!!!

Three networks stopped their special event programming for direct reports from the Voice of Lunar Orbiter, Ed Brummer, NASA LRC, as they were covering the first picture returns from the auditorium. You heard it over the OVCS at the same time -- as did Goldstone, Woomera, Madrid, and Langley. Good job, Ed!

Captain Scherer said in the opening statement of the press conference, "It is difficult to find words when the "fantastic" has become "routine."

BATTLE SHORTS?

Overheard on the OVCS from DSS 12 - during deboost, "Station 12 has their Battle shorts on!" Question - Were they red or green? - Explanation: "Battle Short" is an emergency procedure during critical mission phases to prevent the transmitter from going off the air under any circumstances short of a complete transmitter blow-up.

NBC REPORT

Ron Smith from ye olde Ed's Seattle home base says he watched a very informative NBC TV special on L.O. "Project Engineer". Tom Costello explained some of the more technical aspects of the L.O. operation in very understandable language. Good show, Tom!

THE BIG PICTURE

Thanks to Walter Schurr, the folks in the Seattle MPC area can watch L.O. pictures on wide-screen TV. They take a network TV picture of the 1/10" square spacecraft original and project it on an 8 x 10' screen in the MPC Theater. Comes out pretty clear, according to Walt.

We understand the sampling method used to get pictures for the Press is like taking one beer bottle every 20 seconds from a passing row of bottles in a brewery. Then later on you get the whole brewery. ----- Another little gem that was passed along to NASA, why not have the Apollo astronauts reload the Orbiter camera and bring back the old film? ----- And another, -one L.O. engineer to another, "Wonder how Jodrell Bank's doing with our video signal."

(Ed's. note: The video data amplitude modulates the 310 Kc subcarrier producing a vestigial side band signal spectrum which phase modulates the S-band carrier. Data is transmitted over the high-gain antenna with telemetry in a continuous stream. -----Try that on your old piano.)

MOON BREATHING?

Each iteration of the FPAC moon model plot indicates a slight change from the previous plot. We have concluded therefore that it is either alive and breathing or made of Jello.

61 - HOT SPOT AGAIN

Another fire at DSS 61, 200 yards from the site, brought everyone out of air-conditioned comfort to bring it under control. Again, no damage to station equipment, but it sure looks like a good place for Smokey the Bear.

PLANE CHARTER

Six aggressive folks who wanted to get to Seattle fast, and couldn't get seats - chartered a plane at about \$14 more, each, and made the trip. This "modus operandi" is not recommended except in extreme emergencies. Besides, doesn't it invalidate most life insurance coverage?

ANOTHER YAMAUCHI STORY

A BUGL reporter saw Tom in the middle of a throng of newsmen - wearing a big round I.D. button with the following inscription:

T. T. YAMAUCHI
The Boeing Company
WE MAKE AIRPLANES, TOO

WATCH CHANGE PROCEDURE

We've received almost as many recommendations on how to set up our watch schedules as we have team members. Our present schedules are timed so that watch handover occurs every 3 orbits (about 10.5 hours) during earthset. They are also juggled so that each team will have one extended period off each week. Just to show you we're a democratic outfit, we're taking a poll on other possible watch schemes. Indicate your choice in the appropriate block and return to the BUGL. No return - will be considered as satisfaction with the present scheme.

- ☐ Change watch every 3 orbits during earthset, but maintain continuous Red - White - Blue team rotation cycle.
- ☐ Set up 3 regular eight-hour shifts rotating on a continuous basis, ie, Red Team 0800 - 1700, White Team 1600 - 2400, Blue Team 0000 - 0800.
- ☐ Work the same 12 hours on and 12 hours off for five days, then have three days off, then change to the opposite 12 on and 12 off for five days, etc.
- ☐ Other (Explain in 25 words or less)

KLUDGE - LANGLEY STYLE

This particular creation by Bob Smith is an ingenious moon-centered operating representation of the 3-body system - Sun, Moon, and Earth, plus the high and low orbits of L.O. and an Orbiter position indicator. Sun rotates around the Moon and Earth rotates about its own axis in the proper relation to the moon and Orbiter so you can visualize occultation period, station view periods, sunset and sunrise and the relative motion of the spacecraft.

Bob and his assistants raided marine surplus, the LRC trash bin and the Hampton counterpart of Black and Tan Surplus for the kludge components. He used a marine wind indicator power supply, an electric clock motor, two scrap synchro selsyns, part of a surplus gunsight and several plexiglass disks. Would you believe that it works? -- It does - and only has to be tweaked about one degree per day to keep it in sync. That's equal to about 4 minutes per day on your 24 hour clock. It's a very handy visual aid and is a good example of governmental economy for the Washington (D.C.) folks. Stand up and take a bow, Bob!

SCHEDULE INFO -- August 18

No change from yesterday. (Time is EDT and includes 15-minute briefing)

| | <u>RED TEAM</u> | <u>WHITE TEAM</u> | <u>BLUE TEAM</u> |
|------|-----------------|-------------------|------------------|
| 8-18 | 1525 | | |
| 8-19 | 0230 | 0215 - 1330 | 1315 |
| 8-20 | 0015 - 1100 | 1045 - 2130 | 0030 |
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| 8-22 | 0445 - 1530 | 1515 | 0500 |
| 8-23 | 1215 - 2300 | 0200 | 0145 - 1230 |
| 8-23 | | | 2245 |
| 8-24 | 0915 - 2000 | 1945 | 0930 |
| 8-25 | 1645 | 0630 | 0615 - 1700 |
| 8-26 | 0330 | 0315 - 1400 | |

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LO BUGL

August 19, 1966

Pasadena Edition

Number 12

STAFF Editor: Jack Sutherland, Schedules

Assoc. Ed: Dalton Webb, SFOD

Assoc. Ed: Dale Shellhorn, FPAC

Assoc. Ed: Gerry Brewer, Mission Advisor

Assoc. Ed: John Thomas, SPAC

Maurie Wilkinson, SPAC

COMMAND CONFERENCE

WB're trying to solve two problems:

- 9 1. We plan to take 4 pictures at perilune and 6 on the backside so we can advance the film and read out the 17th and 18th pictures taken by the 24" lens, on the theory that the first picture of a series is the best. At this writing, SPAC is trying madly to get all the commands in before earthset.
2. Details of the transfer maneuver are next in line for decision. There's a trade-off of photo resolution for wider area coverage and good reasons for transfer to either a 46 km or 100 km altitude.

THE FALLIBLE PRESS

Not only does the BUGL honk occasionally, the big city papers do too. Heard about two L.A. papers with conflicting headlines - something like "Orbiter Photos Disappointing" and "Lunar Orbiter Fantastic Success". Also heard from Seattle that Cliff Nelson is not pleased with photo quality and from one of his people here that, "You could say that Cliff Nelson danced a little jig when he saw the picture quality". (There's probably some truth in both sides of the story. We aren't having 100% success with all subsystems but we do have a working space - craft in the intended orbit and we're receiving a tremendous amount of valuable data on gravitational harmonics, micrometeoroid activity, radiation levels and S/C performance in addition to many excellent photos. Seems to me that "Fantastic success" is a pretty accurate description in spite of all the red lights on the SPAC Alarm Display Panel. - Ed.)

BUGL BOWS FOR GRAHAM AND COMPANY

Getting films from Goldstone to JPL, Seattle and Rochester sometimes takes a lot of doing. John Graham, NASA/Langley, and TBC's Jim Kennedy, Ralph Gunn, Dennis

Wood and Walt Locke have put in some mighty long days transporting film and cutting and assembling the strips for analysis. Would you believe the problems encountered in locating some dry ice at 3 A.M. yesterday for the Rochester shipment? After trying all over L.A., OCC Martin Johnson came to the rescue and remembered a storage locker right here at JPL and the problem was solved. Martin also located a drill motor and large screwdriver so the film container could be closed properly and then did most of the work himself. Good show, Martin. Then there was a big picture to prepare for the press conference and on and on!

LOST (OR STOLEN?)

In the exultation just after deboost, FPAC's graph of doppler shift during the burn turned up missing. It is strongly suspected (in fact there is a witness but he refuses to testify) that a high ranking visitor took the still unfinished graph away. He probably wanted to show off the first indication of our success but by now the graph must be of little value except for FPAC records. The missing graph was a "Z" shaped line with plotted points on 11 x 17 brown clearprint graph paper. The axes were scaled off with numbers but were otherwise unlabeled and no title had been applied.

Would the person who has a copy of my collection of reprints on Satellite Mechanics - published by the Am. Assoc. of Physics, 8-1/2 x 11" = please return them? D.Shellhorn

COMMON ERROR

There was a communication problem between 44 and 94 causing internal restart, interrupted TTY communications, and much computer down time. TBC software experts Wayne Walker and Jan Charnell solved the problem and now the 44 and 94 can talk to each other and "agree" when they want to share the disk storage.

NEW WHEEL?

Congrats (?) to DACON Bob Macauley on the orange badge of admission to the Boeing parking lots. We'll pass your parting shot along to the troops, Bob, "COGCOG Scratch files on disk have been maintained and we're in hog heaven". (Ed. Note: Would you believe "COGNAC"?!)

BOEING NEWS BRIEFS

Remember the BUGL item about "Battle Shorts"? Boeing news carried a later story, "-- personnel have removed their battle shorts". They also reported that Eddie Cotton gave Torres a rough battle for the light-heavy crown but came off second best. And the last issue, the one with all the "inside pictures" of the SFOF carried 5 articles and 7 pictures of L.O. operations. Well done, Boeing News!

THE BUGL HONKS

Did-ja notice that issue (No. 10) where we continued a paragraph from Page Two on Page Three? -- We added an item on a different subject at the bottom of Page Two, in the middle of said paragraph. Sorry about that, Chief.

TRIP REPORT

Universal Studio trip is fascinating and well worth the \$3.00 admission, according to Katie Babunes, FPAC.

Roger Skypard, SPAC, reported that Lake Arrowhead provides excellent water-skiing and swimming in a completely smog-free atmosphere. It's about 2 hours from here by car and 5500' elevation. Has a very interesting, winding golf course, too.

MOTHER HUBBARD SAYS:

Did you know that even a 1200-calorie-per-day reducing diet should include the following:

| | |
|--|-------------------|
| Milk | - 1 pint |
| Lean Meat, Fish, Poultry or Liver | - 4 oz. |
| Additional Protein | - 1 serving |
| (1 oz. meat; 1 egg; 1 slice hard cheese; 1/3 cup cottage cheese; 1 1/2 tablespoons peanut butter; 1/2 cup cooked navy, kidney or lima beans or dried peas). | |
| Egg | - 1 |
| Fruit (1 citrus) | - 3 serving |
| Vegetables | - 4 servings |
| Potato | - 1 small serving |
| Bread, whole wheat or enriched | - 2 slices |
| Butter | - 1 teaspoon |

LETTER TO THE EDITOR

An unsigned memo to the BUGL says "That Bob Smith with the Langley Kludge is Robert D. Smith, not to be confused with the FPAC Robert H. Smith who is nowhere near so inventive."

NAME CALLING

Why not call the two levels of photo resolution "Stereo" and "Telephoto" ? These sound good psychologically and are reasonably accurate descriptions of the system.

CAFETERIA SCHEDULE

After several discussions of the problems of furnishing cafeteria support for such an extended mission as ours, the BUGL has been assured that the cafeteria will be open till 10 P.M. and from 2 A.M. through this next week. Best way to keep it open is to use it - and it'll do you good to get up from your console, take a break and go yourself, and not just have someone bring you a Jet Burger.

SCHEDULE INFO

Balloting on shifts indicates most of us are satisfied with the present arrangement. Only 9 ballots received so far. Final count will be made 8/21.

LIFL doesn't yet predict earthset times for the low orbit. It doesn't know which orbit to use yet, either. No change from yesterday (Time is PDT and includes 15 minute briefing)

| | <u>RED TEAM</u> | <u>WHITE TEAM</u> | <u>BLUE TEAM</u> |
|------|-----------------|-------------------|------------------|
| 8-20 | 0015 - 1100 | 1045 - 2130 | |
| 8-20 | | | 2115 |
| 8-21 | | 0745 - 1830 | 0800 |
| 8-21 | | | 1815 |
| 8-22 | 0445 - 1530 | 1515 | 0500 |
| 8-23 | 1215 - 2300 | 0200 | 0145- 1230 |
| 8-23 | | | 2245 |
| 8-24 | 0915 - 2000 | 1945 | 0930 |
| 8-25 | 1645 | 0630 | 0615-1700 |
| 8-26 | 0330 | 0315 - 1400 | |

DSS-41 EDITION

Jack Graves just talked with Lance Sinclair on the OVCS and Lance allowed as how they might like to see copies of the BUGL. So here's the first one. Glad to have you with us, Lance and associates. If you have any inputs, send them to us.

End of this
document

LOBLICAL

N A S A - B O E I N G - J P L

August 20, 1966

Pasadena Edition

Number 13

STAFF: Editor: Jack Sutherland, Schedules

Assoc. Ed: Dalton Webb, SFOD
Assoc. Ed: Dale Shellhorn, FPAC

Assoc. Ed: Gerry Brewer, Mission Advisor
Assoc. Ed: John Thomas, SPAC
Maurie Wilkinson, SPAC

ORBIT TRANSFER

When all the facts were considered in the conference about orbit transfer, the chiefs decided to stick with what is essentially the nominal plan. We're shooting for transfer at 2:50 a.m. PDT and a perilune of about 57.4 km which will decrease as the lunar month progresses to about 48 km and then increase again as the attraction of the Sun and Earth perturb the orbit. This attraction results primarily from Earth's gravitation but is modified by that of the Sun and the shape of the moon, much like the ocean tides on Earth. Velocity change desired is 40.2 meters per second which requires a 22.7 second engine burn.

After the transfer maneuver we'll photograph Sites 1 through 9.1 as planned but we plan to stay loose just in case.

SICK LIST

We're happy to report that the Transponder has apparently recovered--if it was actually sick in the first place. One theory holds that problems with the Star Tracker and Transponder are related and may be due to a piece of aluminum foil nose fairing liner that was torn loose when the fairing was jettisoned. This foil is thought to be reflecting light into the Tracker and also changing the Low Gain Antenna radiation pattern. The shunt regulator power transistor which shorted out several days ago is still sick and drawing 1.2 amps but not causing a major problem. Similarly, the temperature thermistor on one of the solar panels is still on the sick list but not causing a major problem. Leakage in the N₂ Pressure Regulator is causing gradual pressure buildup in the fuel and oxidizer tanks but isn't expected to cause any problems during the transfer maneuver.

The high resolution pictures still show image smear but there are several possible fixes being explored. The folks back at Rochester are running some tests on a camera there, too.

Someone made a crack yesterday about the spacecraft getting by on a "Wing and a Prayer, just like the B-17 airplanes" but we don't agree. However it's clear to us that we'd be in very deep trouble without the old pros on the Launch and Flight Operations team and their expert ministrations.

LUCKY COMBINATION

As we drive up on time to transfer, Mission Advisors Chuck Engle and Capt. Lee Scherer are doing their best to bring us good luck. Chuck has his lucky sweater, the worn brown one with all the holes in it, and will go barefoot at the appropriate time. Capt. Scherer is to wear his plaid jacket to close the loop of luck and make it effective. Don't knock it, troops. It's worked so far.

BATPHONE

The "Voice of LO" folks call their hot line to the von Karmann auditorium, the phone with the flashing amber light on top the "Batphone".

BUGL BLOWS AGAIN

In addition to adding the Woomera folks to our list of subscribers, we've been asked to add Goldstone, Madrid and the Cape. Welcome aboard fellow Orbiters! And don't forget the BUGL when you have a news item or want ad.

WANT ADS

Please refrain from throwing cigarette butts, etc. into coffee spill-over cans. (Ed. note to DSS 41; Have the Aussies learned to make coffee as good as their tea yet?)

FPAC FOIBLES

The long cruise periods when certain parts of the operation are relatively quiet has encouraged improvement in rubber band marksmanship on the part of a certain individual.

NEW BOOK DUE

A mission advisor reported to ye olde editor that a Boeing man is writing a book titled, "The Ugly Advisor".

REASON FOR BACKSIDE PHOTOS

According to a member of the "Voice of Lunar Orbiter" staff, the reason we want backside photos is because hindsight is always better than foresight.

IT'S PATTIE'S BIRTHDAY

Pattie Pierson spent 15 minutes blowing out her birthday cake candles. It seems, her hostesses had some trick candles in with the regular ones, and every time she'd blow, they'd light up again--how frustrating. Happy Birthday Pattie.

PARKING SITUATION

This new parking lot JPL set up for us is working fine. Sure beats climbing the stairway to the stars on the back forty. Thanks, JH.

TECH ASSISTANTS

Calling All Support Chiefs! The Bendix T.A.'s we've come in contact with are a valuable addition to the team and help a lot to keep the show rolling. They're always eager to help do most any chore. Thanks, guys.

SCHEDULE INFO

The pressure is building up to extend our schedule at least through next weekend for special social purposes. How about that, Goldstone? But let's wait till after the transfer maneuver. Here's a re-play of the same old song (Time is PDT and includes briefing.)

| | <u>RED TEAM</u> | <u>WHITE TEAM</u> | <u>BLUE TEAM</u> |
|--------------|-----------------|-------------------|------------------|
| 8-20, Sat. | | | 2115 |
| 8-21, Sun. | | 0745 - 1830 | 0800 |
| 8-21, Sun. | | | 1815 |
| 8-22, Mon. | 0445 - 1530 | 1515 | 0500 |
| 8-23, Tues. | 1215 - 2300 | 0200 | 0145 - 1230 |
| 8-23, Tues. | | | 2245 |
| 8-24, Wed. | 0915 - 2000 | 1945 | 0930 |
| 8-25, Thurs. | 1645 | 0630 | 0615 - 1700 |
| 8-26, Fri. | 0330 | 0315 - 1400 | |

REASON FOR BACKSIDE PHOTO

According to a member of the "Voice of Lunar Orbiter" staff, the reason we want backside photos is because hindsight is always better than foresight.

IT'S PATTIE'S BIRTHDAY

Pattie Pearson spent 15 minutes blowing out her birthday cake candles. It seems, her housemates had some trick candles in with the real ones, and every time she'd blow, they'd light up again--how frustrating. Happy Birthday Pattie.

PARKING SITUATION

This new parking lot is set up for cars working fine. Sure beats climbing the stairs way to the stars on the forty-fifth, JF.

TECH ASSISTANCE

Callie! All right! The Bendix T.A. 1000 is a valuable addition to the team and help a lot to keep the show rolling. They're always eager to help do any chore. Thanks, guys.

SCHEDULE INFO

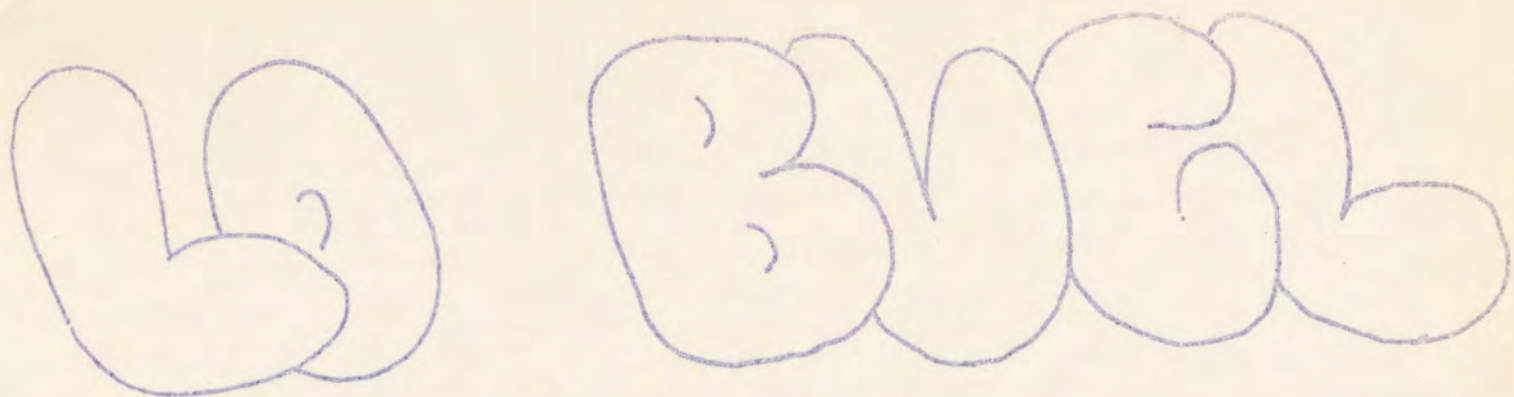
The pressure is building up to extend our schedule at least through next weekend for special social purposes. Here's a preview of the same old show (Time is PWT and includes transfer maneuver. Here's a preview of the same old show (Time is PWT and includes prefling.)

| BLUE TEAM | WHITE TEAM |
|-------------|-------------|
| 0800 1215 | 0800 1215 |
| 0900 1315 | 0900 1315 |
| 1000 1415 | 1000 1415 |
| 1100 1515 | 1100 1515 |
| 1200 1615 | 1200 1615 |
| 1300 1715 | 1300 1715 |
| 1400 1815 | 1400 1815 |
| 1500 1915 | 1500 1915 |
| 1600 2015 | 1600 2015 |
| 1700 2115 | 1700 2115 |
| 1800 2215 | 1800 2215 |
| 1900 2315 | 1900 2315 |
| 2000 2415 | 2000 2415 |
| 2100 2515 | 2100 2515 |
| 2200 2615 | 2200 2615 |
| 2300 2715 | 2300 2715 |
| 2400 2815 | 2400 2815 |
| 2500 2915 | 2500 2915 |
| 2600 3015 | 2600 3015 |
| 2700 3115 | 2700 3115 |
| 2800 3215 | 2800 3215 |
| 2900 3315 | 2900 3315 |
| 3000 3415 | 3000 3415 |
| 3100 3515 | 3100 3515 |
| 3200 3615 | 3200 3615 |
| 3300 3715 | 3300 3715 |
| 3400 3815 | 3400 3815 |
| 3500 3915 | 3500 3915 |
| 3600 4015 | 3600 4015 |
| 3700 4115 | 3700 4115 |
| 3800 4215 | 3800 4215 |
| 3900 4315 | 3900 4315 |
| 4000 4415 | 4000 4415 |
| 4100 4515 | 4100 4515 |
| 4200 4615 | 4200 4615 |
| 4300 4715 | 4300 4715 |
| 4400 4815 | 4400 4815 |
| 4500 4915 | 4500 4915 |
| 4600 5015 | 4600 5015 |
| 4700 5115 | 4700 5115 |
| 4800 5215 | 4800 5215 |
| 4900 5315 | 4900 5315 |
| 5000 5415 | 5000 5415 |
| 5100 5515 | 5100 5515 |
| 5200 5615 | 5200 5615 |
| 5300 5715 | 5300 5715 |
| 5400 5815 | 5400 5815 |
| 5500 5915 | 5500 5915 |
| 5600 6015 | 5600 6015 |
| 5700 6115 | 5700 6115 |
| 5800 6215 | 5800 6215 |
| 5900 6315 | 5900 6315 |
| 6000 6415 | 6000 6415 |
| 6100 6515 | 6100 6515 |
| 6200 6615 | 6200 6615 |
| 6300 6715 | 6300 6715 |
| 6400 6815 | 6400 6815 |
| 6500 6915 | 6500 6915 |
| 6600 7015 | 6600 7015 |
| 6700 7115 | 6700 7115 |
| 6800 7215 | 6800 7215 |
| 6900 7315 | 6900 7315 |
| 7000 7415 | 7000 7415 |
| 7100 7515 | 7100 7515 |
| 7200 7615 | 7200 7615 |
| 7300 7715 | 7300 7715 |
| 7400 7815 | 7400 7815 |
| 7500 7915 | 7500 7915 |
| 7600 8015 | 7600 8015 |
| 7700 8115 | 7700 8115 |
| 7800 8215 | 7800 8215 |
| 7900 8315 | 7900 8315 |
| 8000 8415 | 8000 8415 |
| 8100 8515 | 8100 8515 |
| 8200 8615 | 8200 8615 |
| 8300 8715 | 8300 8715 |
| 8400 8815 | 8400 8815 |
| 8500 8915 | 8500 8915 |
| 8600 9015 | 8600 9015 |
| 8700 9115 | 8700 9115 |
| 8800 9215 | 8800 9215 |
| 8900 9315 | 8900 9315 |
| 9000 9415 | 9000 9415 |
| 9100 9515 | 9100 9515 |
| 9200 9615 | 9200 9615 |
| 9300 9715 | 9300 9715 |
| 9400 9815 | 9400 9815 |
| 9500 9915 | 9500 9915 |
| 9600 10015 | 9600 10015 |
| 9700 10115 | 9700 10115 |
| 9800 10215 | 9800 10215 |
| 9900 10315 | 9900 10315 |
| 10000 10415 | 10000 10415 |

3600 m/sec
9 m/sec

| | |
|--------------|-------------|
| 8-20, Sat. | 0445 - 1530 |
| 8-21, Sun. | 1215 - 2300 |
| 8-22, Sun. | 0915 - 2000 |
| 8-23, Mon. | 1645 |
| 8-24, Tues. | 0915 - 2000 |
| 8-25, Tues. | 1645 |
| 8-26, Wed. | 0915 - 2000 |
| 8-27, Thurs. | 1645 |
| 8-28, Fri. | 0930 |

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NASA - BOEING - JPL

August 21, 1966

Pasadena Edition

Number 14

STAFF: Editor: Jack Sutherland, Schedules

Assoc. Ed: Dalton Webb, SFOD

Assoc. Ed: Dale Shellhorn, FPAC

Assoc. Ed: Jerry Brewer, Mission Advisor

Assoc. Ed: John Thomas, SPAC

Maurie Wilkinson, SPAC

ON THE BUTTON

As orbit transfer time approached, a number of the upper echelon folks put in an appearance at the SFOP. The early-morning hours--and earlier mission planning duties undoubtedly kept some away but we saw Bob Helberg, George Hage, George Hettrick, and Tom Yamauchi crowded around the speakerphones in one little 2 X 4 room. Jack Graves left the chips on the table so he could be there too, sweating it out on the sidelines while most of his team slept. Down the hall in the Mission Advisors area were Dr. Thompson, E. C. Draley, Cliff Nelson, Jim Martin, Bill Boyer & Is Taback. At Langley Assoc. Director Charlie Donlan monitored the net and in Seattle Bill Kann, Jack Minshull, Howard Nye, Ellis Levin and E. J. Conway waited and listened and watched the clock. In the working areas things were different. FPAC had confidence in the orbit determinations and was somewhat relaxed. SPAC was a beehive of activity where everyone seemed to be on his toes and anxious to respond to each command as fast as possible. Information was passed back and forth on the OVCS so fast you could almost set your watch by it if you knew the event sequence timing. And then after the nominal engine burn and velocity change were reported you could read it in the relaxed and happy faces of the watchers. The suspense level equals that of a Hitchcock thriller every time we go through one of these maneuvers.

TRANSFER EXPERTS

With the full realization of contributions made by Red and White teams to a successful transfer maneuver and the fact that the "down under" types were at the steering wheel,

the BUGL wishes to hail the capable members of the BLUE TEAM as TRANSFER EXPERTS and the Woomera troops as qualified HIGH-LOW PILOTS. Another fantastic performance by all and we're sure many of you knew that 5 seconds extra engine burn would have given us a new crater to name.

FROM THE WOOMERA OBSERVER---

An Australian hand printed sign appeared on the MIDE side of the observation gallery during early attempts to acquire Canopus as follows: "Sparkle, Sparkle, Little Twink; Where the Hell are you, you Fink". This was answered with a note on the stations side of the gallery following successful acquisition as follows: "Sparkle, Sparkle Little Fink; We Know now where you are - We Think".

ORBITER'S MAGNETIC PERSONALITY

It seems that Captain Lee Scherer of NASA Headquarters has underestimated the power of poetic license of the press. He was recently quoted by Associated Press in the Corpus Christi Caller on August 15, 1966, "It has passed its first goal attaining orbit around the moon," 'he said grinning.' "America's photographic acrobat, Lunar Orbiter, was swinging around the moon on a magnetic trapeze Sunday, inspiring satisfied chuckles and broad grins among the successful scientists who put it there." The slowing maneuver took Orbiter out of its path past the moon and left it trapped in the Moon's magnetic pull in an egg-shaped orbit. . ."

Captain Scherer had an astute observation on the matter: "It seems that AP just doesn't understand the gravity of the situation."

FANTASTIC VOYAGE

Your SPAC movie critic has finally managed to fight his way through the crowd at Grauman's Chinese Theater. Presently playing at the theater is Fantastic Voyage, a science fiction movie involving miniaturized people on a voyage through the upper part of the body. The movie has a simple plot, passable acting, and extremely imaginative scenic design. In fact, looking at the movie as a whole, the only saving grace is the scenic design. The movie is strictly entertaining and a very pleasant way to spend an evening. However, my advice is to wait until it escapes from the \$2.75 theaters and moves to a theater where the ticket price is more commensurate with picture quality. (Hey Madrid, how's the choice over there -- movies, I mean?)

LADY DACON

The owner of the feminine voice on the Data Control net, Evelyn Knutsen, is hard at work in her spare time preparing a paper titled "Lunar Orbiter On-Site Command and Telemetry Data Handling System" for presentation before the Association for Computer Machinery later this month in Los Angeles. Don't know how she finds time to work on the paper with those long shifts on the DACON net. The BUGL salutes Evelyn for reaching such a high level of proficiency in her chosen profession. Keep it up, gal.

JOLLY GOOD SHOW, CHAPS

We hear Station 41 went into high gear tonight and sent 3 core maps to the spacecraft in 30 minutes flat. They loaded the 69 commands fast and with zero defects. The BUGL tips its hat to our Woomera cobbers.

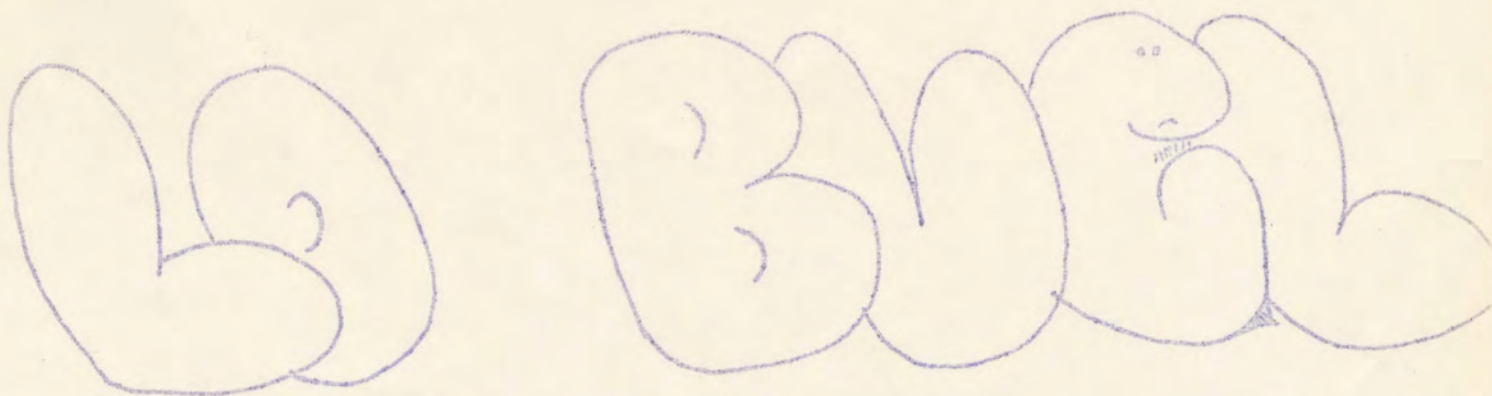
SCHEDULE INFO

The voting on work schedules is over and we'll discuss the results with the area directors and let you know if any changes are to be made.

LIFL now predicts earthset times for the low orbit and somewhere we lost an hour in the shuffle. We'll get into the new schedule in the next 4 shifts and LIFL should keep us honest from there on. We still plan to change shifts about the middle of the earthset period. Lets see if this helps your social scheduling! (Times are PDT and include briefing.)

| | <u>RED TEAM</u> | <u>WHITE TEAM</u> | <u>BLUE TEAM</u> |
|--------------|-----------------|-------------------|------------------|
| 8-21, Sun. | | | 1815 - |
| 8-22, Mon. | 0515 - 1615 | 1600 | 0530 |
| 8-23, Tues. | | 0300 | 0245 - 1340 |
| 8-23, Tues. | 1325 | | 2355 |
| 8-24, Wed. | 0010 | | 1040 |
| 8-24, Wed. | 1025 - 2110 | 2055 | |
| 8-25, Thurs. | 1755 | 0740 | 0725 - 1810 |
| 8-26, Fri. | 0440 | 0425 - 1510 | |
| 8-26, Fri. | 1455 | | |
| 8-27, Sat. | 0140 | 0125 - 1210 | 1155 - 2240 |
| 8-27, Sat. | 2225 | | |
| 8-28, Sun. | 0910 | 0855 - 1940 | 1925 |
| 8-29, Mon. | | 0555 - 1640 | 0610 |
| 8-29, Mon. | | | 1625 |
| 8-30, Tues. | 0255 - 1340 | | 0310 |
| 8-30, Tues. | | 1325 | 2355 |
| 8-31, Wed. | 1025 - 2110 | 0010 | 1040 |

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NASA - BOEING - JPL

August 22, 1966

Pasadena Edition

Number 15

STAFF: Editor: Jack Sutherland, Schedules

Assoc. Ed.: Dalton Webb, SFOD

Assoc. Ed: Jerry Brewer, Mission Advisor

Assoc. Ed.: Dale Shellhorn, FPAC

Assoc. Ed: John Thomas, SPAC

Maurie Wilkinson, SPAC

BACKWIDE PHOTOS

Those backside photos with the V/H sensor off have turned out pretty well. There's a little smear, but they look good through both lenses.

EARTH PORTRAIT

On the 16th orbit, our favorite spacecraft will peer over the shoulder of the moon and take a picture of Mother Earth with the limb of the moon in the foreground. Just now we're wondering how the exposure will be set because of the great difference in albedo of the Earth and Moon.

COMMAND COMMENTS

Ray Rondeau, COMMAND, collared ye olde Ed. and said words to the effect that: "You ought to put something in the BUGL about the excellent support we're getting from the SLOEs and their COMMAND teams. We're not giving them any time at all and they haven't missed getting a command transmitted and executed on time yet." The BUGL echos Ray's comments. Without topnotch performance by all, we'd have had a dead bird a long time ago.

READOUT TO START EARLIER

Because the Power Subsystem is performing so well, we have decided to begin Readout 10 minutes after sunrise instead of 30 minutes after sunrise. It will make our excessive temperature problems more severe but we'll have to learn to live with it.

SPACECRAFT FEVERISH

The station antenna-pointing folks may have wondered why they have so much work to do these days. Here's a reason: The thermal paint has degraded somewhat and we have to pitch off the sun to keep the spacecraft cool. And that means the ground antennas have to be aimed more precisely to get the proper signal.

MISSION ADVISOR TO START WORK

That personable young Virginia boy, Buddy DeRyder, has been drafted by SPAC to work with Bill Rosenberry during a special photo subsystem experiment to try and isolate the high resolution camera problem. As Buddy was dragged away from the MA dart board he was heard to complain, "My 4-F draft card doesn't mean a thing anymore."

PAGE BOY GETS ITS MAN

Your life just isn't your own when you carry a Page Boy receiver on your belt. It'll even catch you at the race track as Jack Graves learned a few days ago. Seems he was getting some leg-type exercise and was in the middle of the Santa Anita racetrack area when his receiver beeped. It's a oneway system so he had to sprint a good 3/4 mile back to the Westerner for the nearest phone. Didn't hear how long he took to recover enough to talk on the phone but we couldn't help wondering how the things work after a swim in salt water.

LOST IN SPACE

Thanks to NASA's Norma Crabill and lovely Laurie Wallace for this little gem by Guy Mullen in the LA Times -

I find it just a trifle soon
For "apolune" and "perilune,"
When "apogee" and "perigee"
Are still a puzzling mystery.

SCHEDULE 8/22/66

| | <u>RED TEAM</u> | <u>WHITE TEAM</u> | <u>BLUE TEAM</u> |
|--------------|-----------------|-------------------|------------------|
| 8-22, Mon. | | 1600 - | |
| Tues. | | 0300 | |
| 8-23, Tues. | 1325 | | 2355 |
| Wed. | 0010 | | 1040 |
| 8-24, Wed. | 1025 - 2110 | 2055 | |
| Thurs. | | 0740 | |
| 8-25, Thurs. | 1755 | | 0725 - 1810 |
| Fri. | 0440 | | |
| 8-26, Fri. | 1455 | 0425 - 1510 | |
| Sat. | 0140 | | |
| 8-27, Sat. | 2225 | 0125 - 1210 | 1155 - 2240 |
| Sun. | 0910 | | |
| 8-28, Sun. | | 0855 - 1940 | 1925 |
| Mon. | | | 0610 |
| 8-29, Mon. | | 0555 - 1640 | 1625 |
| Tues. | | | 0310 |
| 8-30, Tues. | 0255 - 1340 | 1325 | 2355 |
| Wed. | | 0010 | 1040 |
| 8-31, Wed. | 1025 - 2110 | | |

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LO BUGAL

NASA - BOEING - JPL

August 23, 1966

Pasadena Edition

Number 26

STAFF: Editor: Jack Sutherland, Schedules

Assoc. Ed.: Dalton Webb, SFOD

Assoc. Ed.: Jerry Brewer, Mission Advisor

Assoc. Ed.: Dale Shellhorn, FPAC

Assoc. Ed.: John Thomas, SPAC

Maurie Wilkinson, SPAC

SPACECRAFT IS "GO"

Things are still a bit warm on board Orbiter I but all systems are "GO". The N₂ Pressure Regulator is still leaking into the fuel and oxidizer tanks and we're apparently losing some gas through the relief valves.

FPAC has a sketch on the monitor which shows a film-sized rectangle with a large moon limb occupying half of the space and a small round Earth just beside the moon. That's what we call confidence in a predict - and also in overall team capability. Present plan is to read out the Earth picture Thursday.

We're about to run a special shutter test starting with a 3-axis maneuver, then open Camera Thermal Door with the V/H sensor on, close the door and command the camera "ON" for 1 frame - in the dark.

Purpose of the test is to find out if the V/H sensor noise is triggering the shutter.

DACON DICK TRACY

Some villainous computer program has been clobbering the SPAC Common Environment for SEAL according to our DACON detective. Big batches of data are being wiped off the disks by the aforesaid program but we're hot on its trail.

GOOD SAMARITAN?

If Dave Campbell looks peaked these days its because he has been giving artificial respiration to a dying SEAL. (Ed. note: see DACON description above for one of Dave's headaches).

DSN EQUIPMENT FORECASTS

Thought you might be interested in a once-over-lightly coverage of project participation in forecasting our needs for DSN equipment on a world-wide basis. First there's the quarterly 16-month forecast DSN uses to get a long-range evaluation of needs for the several projects they support - Lunar Orbiter, Pioneer, Surveyor, and Mariner at the moment. For example, they're concerned already about the 5 launches scheduled for one particular month of next year. This long look helps in planning for some equipment acquisition to ensure adequate support.

Then comes the monthly 12-week forecast which gives considerable detail on equipment needed for training, launches, tracking, and developmental efforts. DSN has recently computerized the results of this effort so the DSN Project Engineers can see when and for what equipment conflicting requirements exist. These areas of conflicting requirements are worked by the DSN PE's so that when the final detailed request for equipment is made the conflicts are pretty well resolved.

The "DSN Operations Schedule, 7 Day Period," is the one we actually operate under, or at least that's the baseline we use as a point of departure when we have problems in real time. A computerized printed schedule is put to bed each week and, with the aid of the various projects and a system of priorities, the mission that's the most in need generally gets first crack at available equipment.

SPAC SCENES

Gyro Gerry Price was using one of the OVCS (touch-tone) phones like a 10-key adding machine near the end of a long shift recently when he heard, "I'm sorry, the number you have reached is not a working number."

CTD PUSHUP

Relatively unheralded was the first opening of the Camera Thermal Door prior to taking the first pictures but we feel sure RJH and CHN were sitting on the edge of their chairs with crossed fingers waiting for the "Camera Door Open" signal from SPAC.

They and a number of others know how much extra effort went into getting motor, gearbox, and structure all working together.

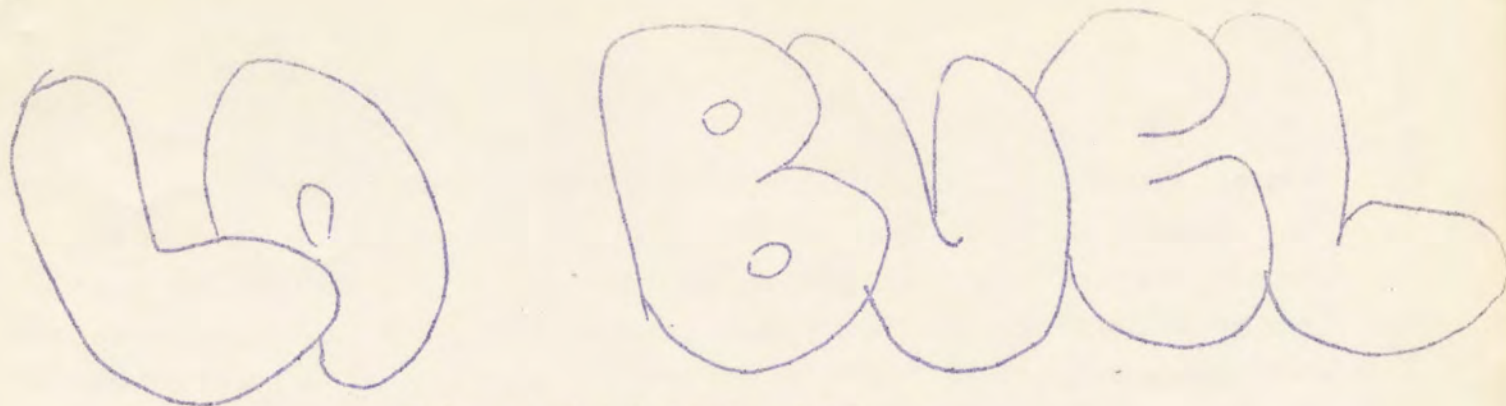
RESULTS OF VOTE

Only 20 people, including at least one each from NASA and JHL, turned in a vote on team working schedules, so we'll continue with our present plan. Of those voting, half voted for 12 on, 12 off and then 3 days off. If you want to see the final tabulation, just ask ye olde Fd..

SCHEDULE INFO

| | <u>RFD TEAM</u> | <u>WHITE TEAM</u> | <u>BLUE TEAM</u> |
|-------------|-----------------|-------------------|------------------|
| 8-23, Tues. | 1325 | | 2355 |
| Wed. | 0010 | | 1040 |
| 8-24 Wed. | 1025 - 2110 | 2055 | |
| Thurs. | | 0710 | |
| 8-25 Thurs. | 1805 | | 0725 - 1820 |
| Fri. | 0450 | | |
| 8-26 Fri. | 1505 | 0435 - 1520 | |
| Sat. | 0150 | | |
| 8-27 Sat. | 2235 | 0135 - 1220 | 1205 - 2250 |
| Sun. | 0920 | | |
| 8-28 Sun. | | 0905 - 1950 | 1935 |
| Mon. | | | 0620 |
| 8-29 Mon. | | 0605 - 1650 | 1635 |
| Tues. | | | 0320 |
| 8-30 Tues. | 0305 - 1350 | 1335 | 0005 |
| Wed. | | 0020 | 1050 |
| 8-31 Wed. | 1035 - 2120 | | |

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N A S A - B O E I N G - J P L

August 25, 1966

Pasadena Edition

Number 17

STAFF: Editor: Jack Sutherland, Schedules

Assoc. Ed: Dalton Webb, SPOD

Assoc. Ed: Dale Shellhorn, FPAC

Assoc. Ed: Jerry Brewer, Mission Advisor

Assoc. Ed: John Thomas, SPAC

and Maurie Wilkinson, SPAC

Assoc. Ed: Bob McCauley, DACON

NEW ORBIT

Another thrilling chapter in the "Perils of Orbiter I" is about to be written as we transfer to an orbit a few miles closer to the lunar surface. FPAC has a plot of the new orbit with some artistic (?) work on it that shows the path going right through a high peak on the moon. FPAC isn't worried about it though; successive orbits will pass on either side of the peak, they hope. Fellow commented tonight at dinner (or was it breakfast) that we win either way with the low orbit. Either we get good pictures or we go home.

Seriously though, after all the successes we've had to date, overconfidence could still cause our downfall. Let's make sure those figures are correct - and have the proper sign. We don't have much margin for error this time so keep up the good work, and let's chalk up another "nominal" orbit.

Vital statistics for this orbit transfer are: 0901 PDT Thursday 8-25-66, 5.4 meters per second velocity change, new perilune of 25 miles (40 km), a reduction of almost 6 miles, and a 4.4 second engine burn to take place as the spacecraft comes around toward perilune. With deboost planned for this later point in the orbit there's a little more margin for error - but not much.

FOUND

3" x 6" green notebook - contains personal notes and time records. Claim at SPAC clerk's desk.

BUGL FLOWS FOR COMPUTER CREW

Hats off to DSN Data Processing System Chief George Emery, the Data Chiefs who oversee the computers, the I/O operators, DAPLOW and TPS people, the IBM customer engineers and the Comm Center. Orbiter programs have used 77% of the total elapsed time since August 9 on the X and Y strings, exclusive of the LHDL time. We've used 567 machine hours up to last night and have run as long as 4-5 days straight. This performance is especially outstanding because of the complexity of the 7094/7044 machines here compared to the standard configuration. Our machines in Seattle by comparison are seldom run longer than 22 hours without maintenance. So you can see why we feel we have performance to blow about. Hope we didn't miss anyone on the computer crew.

SICK LIST

SNOOMAN John Neal has the flu. Hurry back John; we need you.

HAPPY BIRTHDAY, ART!

BOEING NEWS (?) HONKS

Remember a few days ago (BUGL No. 9) the comment about Bill Jury and Bill Clothier of Boeing News not having SFOF badges? Did you see in the upper left photo on page one of last week's Boeing News the picture of "Boeing Engineers" in the FPAC area. It would be nice if the caption were correct because they are a pretty talented group - but the five we could identify all help to manage the DSN for JFL.

BACKSIDE PROBLEM

Flite Two Hal Grenard's Mustang got bitten in the hindquarters while stopped for a light. No one in Hal's family was hurt but a guest had several stitches taken in his head. Mustangs at the vets to be patched up.

KLUDGE FOR A DAY

The "kludge" designation may be a misnomer for the "Guidance and Maneuver Analyzer (GAMA model) because six of them have been ordered from Pacific Miniatures in Alhambra. But it is a curious looking tabletop device with four posts which support a 3-foot square of plexiglas with a hole in the middle. A plastic sphere rests in the hole to represent the spacecraft, and several 10-inch high wires on plastic stands can be fitted with beads to represent other heavenly bodies. When we get the plots from a maneuver program such as GCPL or GCIL, the GAMA can be used for a quick check to make sure we're in the right ball park. The one in FPAC really paid off its \$500 cost when we were trying to visualize relative positions and maneuvers prior to using the moon for mid-course reference and in preparing for backside and Earth photos. And our retired BUGL editor, Dale Shellhorn, gets credited for borrowing a page from the Surveyor manual and ordering a kludge almost like Surveyor's.

SCHEDULE INFO

| | | <u>RED TEAM</u> | <u>WHITE TEAM</u> | <u>BLUE TEAM</u> |
|------|--------|-----------------|-------------------|------------------|
| 8-24 | Wed. | 1025 - 2110 | 2055 | |
| | Thur. | | 0740 | |
| 8-25 | Thurs. | 1805 | | 0725 - 1820 |
| | Fri. | 0450 | | |
| 8-26 | Fri. | 1505 | 0435 - 1520 | |
| | Sat. | 0150 | | |
| 8-27 | Sat. | 2235 | 0135 - 1220 | 1205 - 2250 |
| | Sun. | 0920 | | |
| 8-28 | Sun. | | 0905 - 1950 | 1935 |
| | Mon. | | | 0620 |
| 8-29 | Mon. | | 0605 - 1650 | 1635 |
| | Tue. | | | 0320 |
| 8-30 | Tue. | 0305 - 1350 | 1335 | 0005 |
| | Wed. | | 0020 | 1050 |
| 8-31 | Wed. | 1035 - 2120 | | |

Period of orbit will be shortened about $3\frac{1}{2}$ minutes when second transfer (alias final-ellipse adjustment) is executed at 1601 GMT on day 237. In time this change will require small fix of work schedule.

End of this
document

LO ^{BRAZIL} Buzz



NASA - BOEING - JPL

August 25, 1966

Pasadena Edition

Number 18

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Assoc. Ed: John Thomas, SPAC

Assoc. Ed.: Bob McCauley, DACCN

Maurie Wilkinson, SPAC

CONGRATULATIONS FROM DR. THOMPSON

The following communication was received from the Director of the Langley Research Center on August 25, 1966:

"While the Lunar Orbiter I mission still has many critical phases left before completion, it is apparent that a considerable degree of success has already been achieved. I recognize that this success to date has been accomplished only through your diligent and dedicated effort and a high degree of personal sacrifice. I deeply appreciate this sincere effort. I am sure that through your continual dedication to duty that maximum success will be achieved with the mission, and that we can apply this hard-won knowledge to achieve complete success in the remaining flights in the program.

Floyd L. Thompson,
Director, Langley Research Center"

EARTH PHOTOS

That artist who drew the 3" x 8" earth/moon/orbiter cover for the NASA-Boeing public information folder on LO was quite a prophet - and only a little bit out of phase. Judging by the voice description from Madrid, we'll be very happy with the photos of Earth and Moon when they arrive. Picture sketch in FPAC shows limb of moon on upper right and half-Earth in lower left. Understand some part of earth is hidden behind Moon and some stars are visible. Good show, team. It sure shoots down the "Flat Earth" people! Late flash - Mission Director Jim Martin just brought back a contrasty copy of the picture from AP and it looks like a winner!

The second Earth pic should be read out on orbit 38 about 2 p.m. this afternoon.

TRANSFER MANEUVER

Ed got the word last night that FPAC is touchy about making an "orbit adjustment". "Orbit transfer" is OK - anyway, it worked out right on the button again.

It'll be rough on our families for years when we get together to tell each other how good a job we did in the "Battle of Pasadena/Goldstone/Woomera/Madrid" - and how we'd have been even closer if Shellhorn, Burrill, Webb, Sinclaire, etc., had just taken our particular advice all the way! When you're as good as we are, it's hard to be modest!!!!

TO WHOM IT MAY CONCERN

The Operations Team has asked the BUGL for copies of each of three photos -- 1. Backside, 2. Earth, 3. Surveyor. (Ed. Note: HELP!) (Assoc. Ed. note: Prints of some earlier photos have been ordered from LRC and should be here in a day or so.)

NOTES FROM THE EAST COAST PRESS: By-Line Jack Wilson - Potomac Fever:

"NASA says its Orbiter photographed an area twice as big as Texas on the back of the Moon. An obvious hoax-as anyone in Dallas will tell you."

"Scientists admit the Moon photos are dull and featureless. That's what they get for trying to make a picture without Sophia Loren."

PARABLE OF THE SPACE SCIENTISTS

There was once a man who looked at Sophia Loren and said she was dull and featureless. He was blind. There was once another man who looked at a picture of the moon, did not see Sophia Loren, and concluded that the picture must be the same as the "backside pictures which the Russians took of the moon seven years ago." He was blind too. But the spacecraft manager to whom he referred in the newspaper article he wrote about the picture was not blind. Nor was the "Project Director". Nor the "JPL Scientists". They had faith and could see. MORAL: Neither the Moon picture nor Sophia Loren is dull and featureless unless your point of view makes it so!

NEWS FROM WOOMERA

Australian readers were puzzled at the spelling of the word "Aussie" in "want ads" in edition no. 13. The Aussies make acceptable coffee, excellent tea, and brew bloody good beer!

Jim Williams celebrated his twenty-first (?) birthday early Wednesday A.M. at 0345 local time. A curious kangaroo appeared within feet of the quarters interrupting the revelry.

Syl Polak, Computer Specialist and linguistic scientist is translating "Waltzing Matilda" into Spanish and plans to entertain the troops in Spain next mission.

CAFETERIA SCHEDULE

There's a fairly reliable report out that says the cafeteria will close at 8:30 p.m. instead of 10 p.m. Sunday evening only. Other schedules will probably hold -- i.e., open till 10 p.m. and from 2 a.m. on. Watch the BUGL and cafeteria bulletin board for any changes.

SCHEDULE INFORMATION

To get change of watch in sync with the lower orbit will have to wait till Blue comes in again. Then we'll spread the change over 3 shifts and continue as shown till we get an updated LIFL run.

| <u>RED TEAM</u> | | <u>BLUE TEAM</u> | |
|-----------------|-------------|------------------|-------------|
| 8-25 | 1805 - 0450 | 8-25 | ----- |
| 8-26 | 1505 - 0150 | 8-26 | ----- |
| 8-27 | 2220 - 0850 | 8-27 | 1205 - 2235 |
| 8-28 | ----- | 8-28 | 1850 - 0525 |
| 8-29 | ----- | 8-29 | 1530 - 0205 |
| 8-30 | 0150 - 1225 | 8-30 | 2230 - 0905 |
| 8-31 | 0850 - 1925 | 8-31 | ----- |

| <u>WHITE TEAM</u> | |
|-------------------|-------------|
| 8-25 | ----- |
| 8-26 | 0435 - 1520 |
| 8-27 | 0135 - 1220 |
| 8-28 | 0835 - 1905 |
| 8-29 | 0510 - 1545 |
| 8-30 | 1210 - 2245 |
| 8-31 | ----- |

Note the specially designed wallet size schedules! Compliments of -- would you believe 'Botary 500'?!?!

End of this
document

L.O. BUGL

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Editor: Dalton Webb,
SFOD

Dale Shellhorn,
FPAC

Jerry Brewer,
Mission Advisor

John Thomas and
Maurie Wilkinson,
SPAC

Bob McCauley,
DACON

August 26, 1966

Pasadena Edition

Number 19

The LO BUGL is issued for members of the world-wide Flight Operations Team of Lunar Orbiter, for non-operational information only.

BUGL BLOWS FOR STATIONS

The DSS teams form the essential portion of the loop in retrieving the data from the Lunar Orbiter and deserve a tremendous WELL DONE for their efforts. The photographs seen so far attest to their efforts in particular. In numerous cases, their hours have been even longer than the SFOD work schedule due to P.I.O. Commitments, but they have fulfilled requests and requirements. For example, DSS 12 recorded twice as much film as was readout, once real time and once from tape for the first readouts of the mission. DSS 41 and 61 made comparable efforts. The excellent quality of the photographs shows the excellent quality of their skill.

WHO HAS ANGERED THE SUN GOD?

Your friendly SPAC Protons, Thomas and Wilkinson, are searching frantically for the person or persons who have roused the sun from its past state of beaming good will toward the L.O. into its present ugly humor. Today the sunspot number rose to nearly 240 from a value near zero at the beginning of the mission, and two unusually ugly sunspot graphs now threaten to expose the L.O.'s unprocessed film to a stream of high energy protons. Today's Space Disturbance Forecast from Boulder, Colorado, the solar weather man, gave the probability of occurrence of a proton event for August 27-29 as 30, 40, 40 percent, respectively. Perhaps old Sol wants his picture taken also! Keep your fingers crossed until bimat cut, everyone, and then we can ignore this bit of temper. The lunar environment as measured by the scintillation counters and the micrometeoroid detectors, has produced no unpleasant surprises as yet, and the Protons have cheerfully accepted their subsequent lack of activity as being in the general interest.

BUGL FLOWS AGAIN FOR SUPPORT CHIEF

The old coffee pot is still on and perking outside of FPAC, thanks to JPL and the Support Chief group. So let's help to reduce the expense of keeping us awake by cutting back on the number of cups we use - stow 'em in your desk between refills. Thanks, troops!

SOFTWARE CHANGES FOR MISSION "B"

The SPOD wants to remind all interested parties that the time has come for requesting software changes for the next flight. All TBC analysts should submit change requests to Bill Burr. All DSN changes should go to Skip Newhall. All LRC requests to Dalton Webb. A meeting will be held next Tuesday (30 August) at 10 a.m. to determine priority for implementation, so if you desire changes get your requests in now. Software freeze date for Mission B is 10 October.

HARDWARE CHANGES FOR MISSION "B"

Following the above theme, anyone planning for substantial differences in equipment requirements for Mission B should so advise Jan Charnell or Jack Sutherland. We're basing our 12-week forecast on Bob Wegner's newest training chart, extended mission planning, and equipment usage to date. You might also be interested to know that we've used approximately 1300 computer hours of the 1500 hours requested for the fiscal year '66-'67. No further comment at present.

2nd EARTH READOUT DELAYED

Much as we wanted that 2nd earth shot back here on earth, we delayed readout of that frame till the final readout period when the equipment deck reached 103°. We had to pitch the S/C off the Sun 16° to cool it down. Pitching off the Sun dropped the EMD temperature 5-6°, back within tolerance.

Site 6 photos were taken tonight on orbit 39 and we expect to have them readout and flown in from Goldstone in the morning.

About 11 p.m. tonight (PDT) we'll fire the engine isolation squibs so we won't lose any more nitrogen through the pressure regulator (and can't fire the engine) and then we'll really be in orbit and the Blue Team will have missed it's chance to make a soft landing on the moon! Tough luck, Ken Burrill.

CLUB 91 PARTY

Vague reports of lots of people at Club 91 lead one to assume that the "Earth Photo Party" was a huge success - certainly lots more fun than a Tupperware party!!!

SPAC MONITOR

"We may not be the best scientific mission but we sure are a GREAT vaudeville act." (Ed note: What's wrong with the scientific aspects of LOP?)

DINKEY DIE MESSAGE

Fellow in Seattle asked us to congratulate Bill Williams for getting his picture on the new Woomera mailing envelope, but we don't understand the request. We thought Bill looked more like MacNamara and besides, the "Abo" on the envelope carries a spear instead of a headset!

SCHEDULE INFO

With the airlines flying again and with a new LIFL run, we can go a bit farther out on our limb -

| | <u>RED TEAM</u> | | <u>WHITE TEAM</u> | | <u>BLUE TEAM</u> |
|------|-----------------|------|-------------------|------|------------------|
| 8-27 | 2205-0830 | 8-27 | 0135-1220 | 8-27 | 1205-2220 |
| 8-28 | ----- | 8-28 | 0815-1910 | 8-28 | 1855-0530 |
| 8-29 | ----- | 8-29 | 0515-1555 | 8-29 | 1540-0220 |
| 8-30 | 0205-1240 | 8-30 | 1225-2305 | 8-30 | 2250-0930 |
| 8-31 | 0915-1955 | 8-31 | ----- | 8-31 | 1940-0620 |
| 9-1 | 0605-1645 | 9-1 | 1630-0310 | 9-1 | ----- |
| 9-2 | 1320-0000 | 9-2 | 2345-1025 | 9-2 | 0255-1335 |
| 9-3 | 1010-2045 | 9-3 | 2030-0705 | 9-3 | ----- |

BUGL NOW RELEASED FOR STATIONS

We now have official sanction to TWX the BUGL to all stations -- except for the "interesting" parts that don't pertain directly to the mission. Short form will be transmitted every other day with the unexpurgated version to follow by mail. Sorry about that, Chief.

JERSEY "DISH" MAKES GOOD

The Burlington County (NJ) Times carried a clear and concise article about the L.O. and more detail about the RCA High Gain Antenna than we've seen for some time. Maybe the SPAC troops would do well to read the part about the antenna rotating motor so they could eliminate some attitude maneuvers and give the OD types a break.

End of this
document

LO-BUGL

August 28, 1966

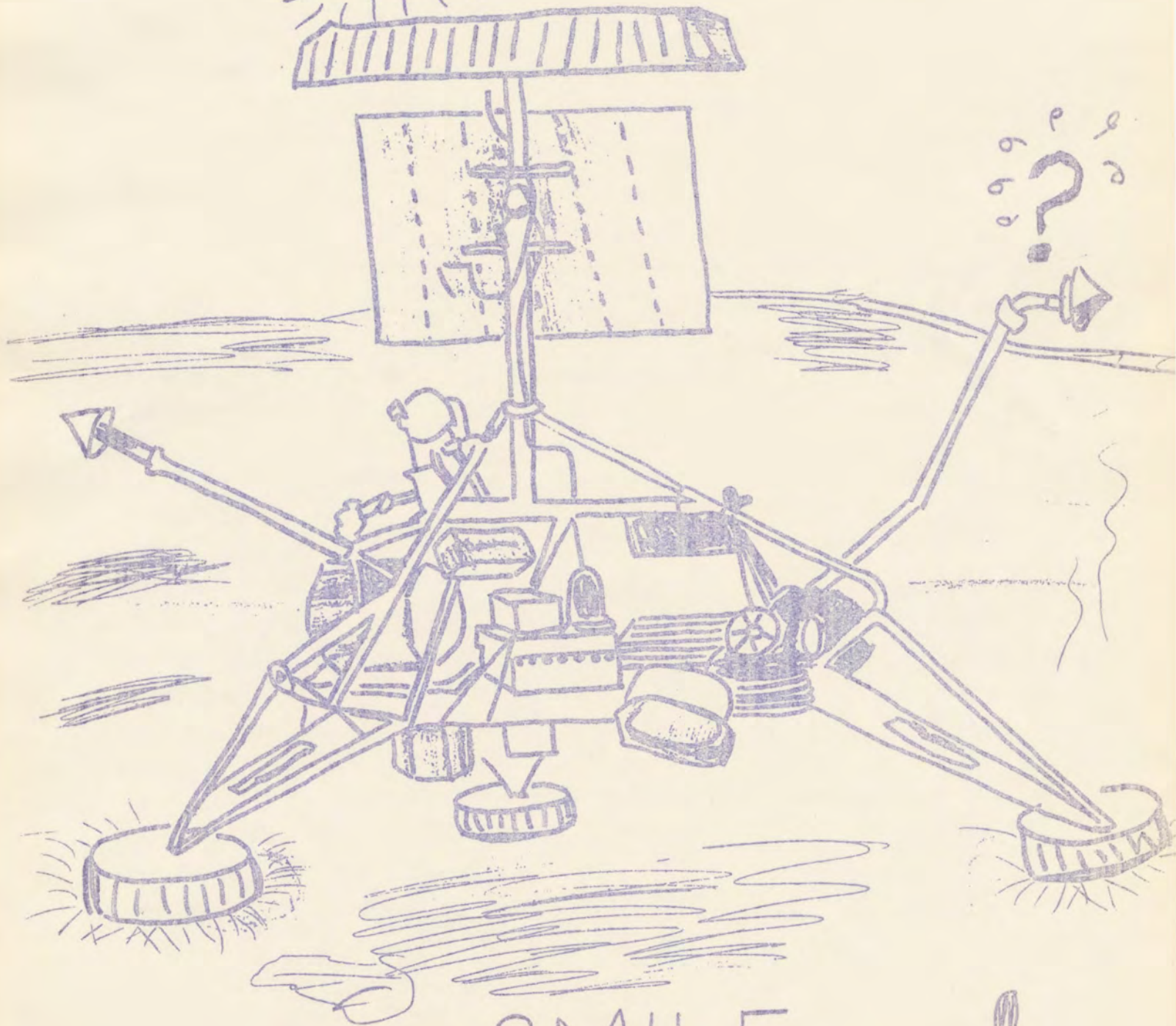
Pasadena Edition

Number 20

ZOOM

CLICK

CLICK



SMILE

The LO BUGL is issued for members of the world-wide Flight Operations Team of Lunar Orbiter, for non-operational information only.

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Editor: Dalton Webb, SFOD
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Bob McCauley, DACON

SURVEYOR TO POSE

Site 9.1 is due in front of the camera late tonight (PDT), hence the cartoon cover. Bendix Ops. Aide Frank Shanklin sketched Surveyor after an idea which we think came from Howie Mathews. Thanks, fellas.

CANOPUS LOST AGAIN

If you check the plotted curves on the south wall of the SPAC area you'll see that the time we have available to locate Canopus (time between Earthrise and Sunrise) is decreasing with each orbit. Anyway, we lost Canopus for about 7 hours earlier tonight. We do have several more or less desirable workarounds available and actually used the high gain antenna radiation pattern to update the IRU reference data and proceed with the picture routine. Expect more Canopus problems as the orbit numbers mount. And the stations can expect more of a workout too. We hear that Floyd Layton and the Goldstone team executed more real time commands on orbit 47 than they had for many a day. Nice going, Twelve.

BUGL FLOWS FOR TRACK

Middleman in the job of exchanging data and commands between the SFOF and the Deep Space Stations is the Track Chief and his crew. - He brings up the stations before their view period and sends out a prepared command to exercise all possible forms of command transmission. He makes sure that tracking instructions are available to the stations, including predicts, pointing angles and Doppler characteristics and answers questions from the stations on telemetry or tracking. In addition he keeps an RF advisor on call for problems in signal variation and rate of tracking.

These folks live in a glass house surrounded by consoles and TTY machines on the first floor of the SFOF, between FPAC and the receptionists. Though they

don't have a big sign out front, there's a hard working outfit behind the closed door. Ken Hornbrook and Dave Passell, JHL, run the show, in addition to their TIM documentation work. Thanks, Track!

PROSPECTIVE SCIENTIFIC REASSESSMENT

The "testimony" is not all in by any means, but it begins to look like either the moon is smaller than expected (by only a few kilometers) or else the V/H sensor has got a small bias to her. Didn't the Ranger shots indicate a smaller moon by registering impact a small fraction of second later than predicted?

THE BUGL HONKETH!

BUGL #19 errorith on Page 2 when it says that the engine can't be fired again because the isolation squib has been fired. "Would you believe" another two minutes (at least) of operating time exist. Where would the friendly SP0D like to go - up, down, or sideways?

SHADES OF THE 707

Sign on the monitor tonight:

COMMAND DIRECTIVE

" Do a slow barrel roll over Mare Washington during Gold Cup race while cutting Bimat."

BLUE "SPACECRAFT" IS TRAVELER

There's a carton from United Air Lines waiting for Blue Team SPACECRAFT Ken Burrill. We haven't seen it yet but suspect it is a plaque that testifies Ken has travelled 100,000 miles by air. Good show Ken - It helps to sell more airplanes, too.

PATTI'S LEAVING BUGL STAFF

Girl reporter, Patti Pierson is leaving tonight with her hubby for home, after helping to write, edit, type, collate, staple, and distribute the BUGL for 10 these many issues. Not only ye olde Fd., but the entire SPAC team will miss her. Thanks, Patti, for doing all the "extra duty" on the BUGL, and for the many jobs you did to make work easier for the troops in the SPAC area.

SCHEDULE INFO

| | <u>RED TEAM</u> | | <u>WHITE TEAM</u> | | <u>BLUE TEAM</u> |
|------|-----------------|------|-------------------|------|------------------|
| 8-27 | 2205-0830 | 8-27 | ----- | 8-27 | ----- |
| 8-28 | ----- | 8-28 | 0815-1910 | 8-28 | 1855-0530 |
| 8-29 | ----- | 8-29 | 0515-1555 | 8-29 | 1540-0220 |
| 8-30 | 0205-1240 | 8-30 | 1225-2305 | 8-30 | 2250-0930 |
| 8-31 | 0915-1955 | 8-31 | ----- | 8-31 | 1940-0620 |

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document

LO BUGAL

N A S A - B O E I N G - J P I

September 1, 1966

Pasadena Edition

Number 24

STAFF: Editor: Jack Sutherland, Schedules

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SPACECRAFT STATUS

Not much change during recent watches. We're still at approximate thermal equilibrium and pitched off the sun about 22°. Readout continues as planned only we "Qual Test to a higher temperature each day."

PICTURE PILFERING

John Graham has received enough copies of photos for all members of the Flight Ops Team and had most of them made into sets last night. However, we have a problem. About 100 of the envelopes disappeared from the Mission Advisor area last night and someone is going to have to do without any unless we can get some more from Langley. Besides, those that were taken were incomplete. If you did obtain more than one set of pictures, please keep one and return the others to Jack Graves or one of the Boeing girls for Jack so everyone can have a set.

COMPUTER PROBLEMS?

Things were going a bit slowly on one series of commands being transmitted and COMMAND Bruce Ageson knew that SEAL scripts take quite a bit of time so he asked ACON, "What am I doing now? Time-sharing with a herd of SEALS?"

CAR EXPENSE ITEM

RITE-RATE asks that no repairs, tires, parts, etc., be purchased for their rental cars-unless the cost is less than \$3.00 or they authorize it in advance. Get a receipt for items such as tire repair and turn it in when you check in your car and they'll reimburse you for it in cash. They'll wash your car if you stop in but won't authorize you to pay someone else to wash it.

Will the person who has Dodge #323, license FRM 586, please return it to Rite-Rate. It's due to go back to Chrysler.

BENCHMARK "C" SOFTWARE

Standard listings for all Benchmark "C" software except the 7044 system were delivered the other day in the SPOF. People working on software changes may get standard update decks from Valerie Bengt in Trailer 170.

For the uninitiated, Benchmark "C" is essentially the flight software configuration as of 8-29, and for you software types who already know that, Val has copies of a letter defining B/M "C" in enough detail to show even you.

WANT AD

Need sick typist who can use sick typewriter in FPAC area to type sick EUGL jokes. Must be understanding and sympathetic when Editor is sick? and misses deadlines.

LUNA 11 TO RETURN HOME?

Radio news this morning carried a report from Jodrell Banks suggesting that the Russian spacecraft might be on the way back to Earth. Must have packed a lot of extra "go-juice" in its suitcase.

ACE/DEUCE DICED

The activity level at the ACE 2 and DEUCE 2 positions has dropped to a level so that the DEUCE 2 job has been eliminated during the readout period and the duties of ACE 2 diced up among the assistant SPODs.

MISSION B TRAINING

If those of you charged with conservation of the nitrogen remaining in the Orbiter I spacecraft do a good job and save some for the extended mission, we may be able to do our October training with a live bird instead of simulation tapes. If this does happen, the folks who come down for the first time on Mission B won't get the experience of watching canned data. Does that thought make you feel like pioneers?

BOWLING CHAMP

Support Chief Ernie Gustavson took the high singles handicap honors last night with a hot streak which gave him a 603 series. Then he and a partner went on to take third in the mixed doubles. Quite an evening, Gus. Anyone for lessons?

DAMSEL IN DISTRESS DEPT.

Seems like the current routine is for a gal to arrive at thar car about midnight to find a flat tire. Then she returns to the SFOF to call for a serviceman, only to be dissuaded by Sir Lancelot who offers to go change the tire for her. Most recent damsel in distress was Receptionist Ellen Jessel, and yo olde Ed. says anytime you want a wire changed in a dark parking lot, Ellen, just ask us, and not that other guy Jack Huffaker.

TRACK MAY FOLLOW GEMINI

As a backup measure, the Manned Space Flight Network has installed switchgear so that the JPL tracking equipment can be cut into the manned net to take over if needed, in an emergency.

LINDA'S LEAVING

Receptionist Linda Rees, the blond with the beautiful tan is leaving to return to Pitzer College, in Claremont. She is a sophomore and is studying art history on an academic scholarship. Actually Linda, we think ballet dancing would be more fun but good luck anyway.

SCHEDULE INFO

| <u>Red Team</u> | | <u>White Team</u> | | <u>Blue Team</u> | |
|-----------------|-------------|-------------------|-------------|------------------|-------------|
| 9-1 | 0555 - 1630 | 9-1 | 1615 - 0250 | 9-1 | ----- |
| 9-2 | 1255 - 2330 | 9-2 | 2315 - 1005 | 9-2 | 0235 - 1310 |
| 9-3 | 0950 - 2025 | 9-3 | 2010 - 0640 | 9-3 | ----- |
| 9-4 | 1640 - 0315 | 9-4 | ----- | 9-4 | 0625 - 1655 |
| 9-5 | ----- | 9-5 | 0300 - 1335 | 9-5 | 1320 - 2355 |
| | | 9-5 | 2340 - 1015 | | |
| 9-6 | 2020 - 0655 | 9-6 | ----- | 9-6 | 1000 - 2035 |
| 9-7 | ----- | 9-7 | 0640 - 1715 | 9-7 | 1700 - 0335 |
| 9-8 | 0320 - 1350 | 9-8 | ----- | 9-8 | 1335 - 0005 |
| 9-8 | 2350 - 1025 | 9-9 | 1010 - 2045 | 9-9 | 2030 - 0705 |
| 9-10 | 0650 - 1725 | 9-10 | 1710 - 0340 | 9-10 | ----- |
| 9-11 | 0325 - 1350 | 9-11 | 1335 - 0010 | 9-11 | 2355 - 1030 |

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document

LO BUGL

NASA - BOILING - JPL

September 2, 1966

Pasadena Edition

Number 25

STAFF: Editor: Jack Sutherland, Schedules

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Assoc. Ed: Jerry Brewer, Mission Advisor

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The LO BUGL is issued for members of the world-wide Flight Operations Team of Lunar Orbiter, for non-operational information only.

TO THE FLIGHT TEAM

As we come down the homestretch on Mission A, it is my intention to release flight team members for return to Seattle as early as possible. Some of our crew have already departed. But before the rest of you depart, I want to blow the BUGL a little. Having been associated with several other flight operations teams during past years, I feel I have a pretty good yardstick. The performance of our Lunar Orbiter Flight Team on Mission A has far surpassed my most optimistic expectations, and certainly set a high standard second to none. This type of performance did not happen accidentally--it happened because of the hard work and dedication of all hands. Previous editions of the BUGL have given credit to the Red Team for this, the White Team for that, and the Blue Team for something else. For my money there hasn't been one major event which hasn't been a total team effort, and that includes our friends at each Deep Space Station. I am extremely proud to have been a part of this team.

Jack Graves

VISITORS' LOG

The U.S. Norwegian Ambassador to Spain, Senor Ejarne J. Slind, has arrived here for a brief tour of duty as a "JPL Scientist".

TRAINING CONFERENCE

Bjarne Slind and Bob Wegner are coming down after Labor Day to discuss training with Jack Graves, Bill Boyer, Randy Mixon and all. After that subject is put to bed we'll probably add the extended mission planning and revise the Master Operations Schedule for the November mission.

There's a meeting on today to discuss extended mission operations (after readout) and we feel there are probably many good ideas on the subject among other BUGL readers. If you have suggestions for using the spacecraft to add to man's knowledge or to enhance training for our November mission, please pass them along to Jess Timmons in the Mission Advisors area before Monday. - Jess is to prepare a summary for the Mission Director.

DRIVER LOCATED

Yesterday's BUGL ad reached the driver of the Dodge and we've arranged to return the car to Rite-Rate. Thanks, troops.

AEROSPACE MANAGEMENT NEWSLETTER - AUGUST 29, 1966

"In these past few days the fantastic has become routine." With these words a NASA official described his feeling about the remarkable first flight of our Lunar Orbiter. They help to express my feelings -- and those of thousands of other company employees -- for the truly outstanding performance of Lunar Orbiter Project members in Seattle, at Cape Kennedy and at Pasadena.

Bill Allen, George Stoner and I had the privilege of observing the receipt of the first pictures at Spacecraft Center at JPL. At this point, suspense was almost missing because Orbiter's performance during the flight to, and orbit about, the moon had given everyone a great deal of confidence.

When the first pictures were received, however, it became apparent that one of the camera systems was experiencing some difficulty, the other performing well. For the next four days Boeing and NASA team members analyzed the trouble and succeeded in identifying the difficulty. While correcting the camera's high resolution photographic process remains a problem for this flight, there is no doubt about our ability to correct the process for future flights.

(continued next page)

We must not let this single camera problem detract from proper recognition of the outstanding performance of the spacecraft itself. All the work of the dedicated employees who made it possible — in shops and labs, in offices and control rooms — far from the Moon and the eye of national television deserves great praise. The Lunar Orbiter Team deserves the accolade "Professional" in the truest sense of the word.

My thanks and congratulations to each and every person who contributed to the historic flight of our company's first spacecraft.

/s/ Lysle A. Wood

SPACECRAFT STATUS

Temperature has been stabilized 22° off the Sun and nitrogen supply is being rationed as planned. Readout is going along a bit faster than planned with approximately 2.4 frames being read out per orbit. We've been able to read out for 100 minutes per orbit instead of the nominal 86 minutes.

Perhaps the most interesting part of the Spacecraft Control job just now is watching the radiation level increase. We're over 44 Rads now, from 2.0 on the last report a day or so ago. The PROTONs chose a good time to leave, didn't they? They did warn us about it before they left, though, and were pretty certain that no major problems would result. The film can take a good many more rads now that it has been processed but we might have had to do some scrambling if this solar storm had come along last week.

SCHEDULE INFO

| <u>RED TEAM</u> | | <u>WHITE TEAM</u> | | <u>BLUE TEAM</u> | |
|-----------------|-------------|-------------------|-------------|------------------|-------------|
| 9-2 | 1255 - 2330 | 9-2 | 2315 - 1005 | 9-2 | 0235 - 1310 |
| 9-3 | 0950 - 2025 | 9-3 | 2010 - 0640 | 9-3 | ----- |
| 9-4 | 1640 - 0315 | 9-4 | ----- | 9-4 | 0625 - 1655 |
| 9-5 | ----- | 9-5 | 0300 - 1335 | 9-5 | 1320 - 2355 |
| | | 9-5 | 2450 - 1015 | | |
| 9-6 | 2020 - 0655 | 9-6 | ----- | 9-6 | 1000 - 2035 |
| 9-7 | ----- | 9-7 | 0640 - 1715 | 9-7 | 1700 - 0335 |
| 9-8 | 0320 - 1350 | 9-8 | ----- | 9-8 | 1335 - 0005 |
| 9-9 | 2350 - 1025 | 9-9 | 1010 - 2045 | 9-9 | 2030 - 0705 |
| 9-10 | 0650 - 1725 | 9-10 | 1710 - 0340 | 9-10 | ----- |
| 9-11 | 0325 - 1350 | 9-11 | 1335 - 0010 | 9-11 | 2355 - 1030 |
| 9-12 | 1015 - 2050 | 9-12 | 2035 - 0710 | 9-12 | ----- |
| 9-13 | ----- | 9-13 | 1715 - 0350 | 9-13 | 0655 - 1730 |
| 9-14 | 1355 - 0030 | 9-14 | ----- | 9-14 | 0335 - 1410 |
| 9-15 | 2055 - 0730 | 9-15 | 0015 - 1050 | 9-15 | 1035 - 2110 |
| 9-16 | ----- | 9-16 | ----- | 9-16 | 0715 - 1750 |

LATE FLASH: SOLAR FLARE OCCURRED AT 0530 SEPT. 2 (GMT) AND APPEARS TO BE OF CLASS 2-3 MAGNITUDE, A LARGE ONE WHICH WOULD PROBABLY HAVE DAMAGED UNPROCESSED FILM. SPACECRAFT WILL KEEP CURRENT ON FLARE PROGRESS. OUR LUCK IS STILL WITH US.

LESS THAN 1,250,000 SECONDS LEFT!!!

THE BUGL WILL NOT BE ISSUED BETWEEN NOW AND NEXT WEDNESDAY UNLESS WE FIND SOMEONE WITHOUT ANY "WON'T POWER" TO EDIT IT. SORRY ABOUT THAT.

End of this
document

LO BUGL

NASA - GODDARD - SFL

September 4, 1966

Readout Station

Number 25

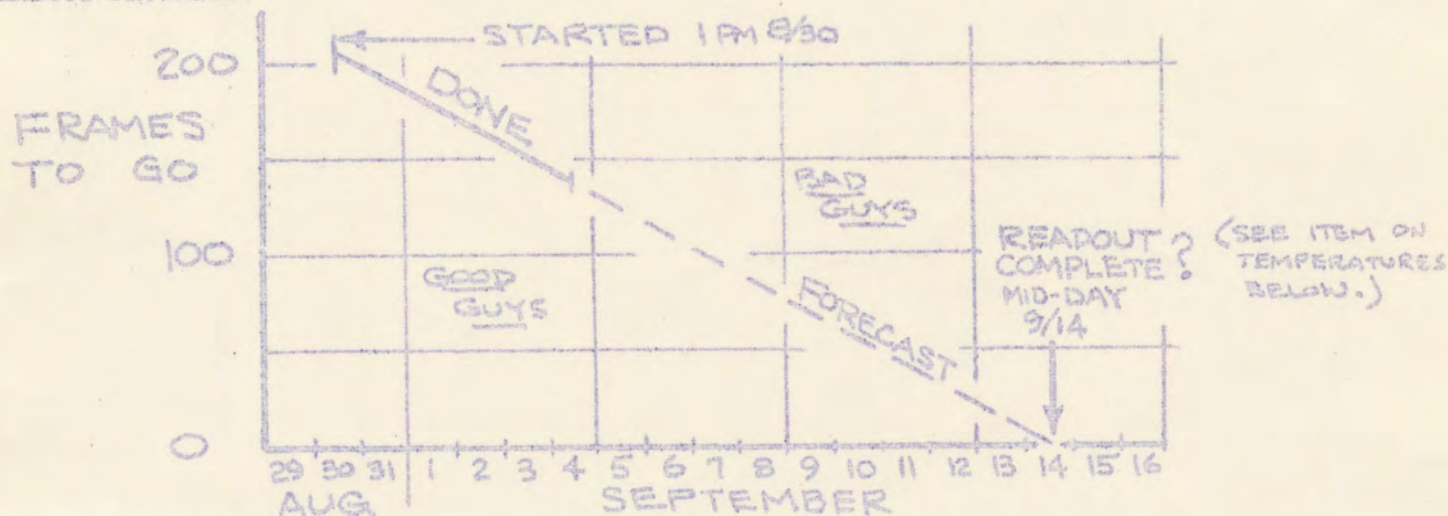
STAFF: Editor: Jack Sutherland, Schenley

The LO BUGL is issued for members of the world-wide Flight Operations Team of Lunar Orbiter, for non-operational information only.

SPACECRAFT STATUS

The spacecraft remains pitched off the sun 22° to give the best compromise between

READOUT PROGRESS:



equipment mounting deck temperatures (EMD) and available electrical power during readout. Even at this orientation the EMD temperatures have been rising slowly. Deterioration of the EMD thermal coating is the suspected cause. Reduction in the readout time during each orbit may be required to counter further temperature rise.

The Solar Flare reported in the last issue produced a final reading of 135 rads at the camera looper. We hear that Earth-based observers call this one of the strongest bursts of solar activity ever recorded. Lucky L.O. film was not vulnerable at the time! Wouldn't our recently departed "Protons" have been thrilled to see it first hand?

FESKY PERILUNE PERTURBATIONS

Perilune has begun a sashay to lower altitude which is earlier and larger than predicted. Today, perilune has just dipped below the previous minimum of about 40 km. FPAC has been dubious of their moon model and this clinches it. The Langley LUNGFISH (LUNar Gravitational Field In Spherical Harmonics) team sent out a newer moon model today which fits past perilune behaviour better but still far from perfectly. There is no cause for immediate concern. Perilune will swing up again in a few days after passing a safe minimum and readout will be concluded before the next down-swing.

FPAC BUG-OUT

Hal Grenard and a skeleton crew are keeping tracking predicts and trajectory forecasts up to date. The rest of the FPAC crew have saddled up and headed north after pounding their enormous pile of data down into a manageable summary. A small crew will return to calculate the selenographic coverage of each photo frame when edge data is available from completed readout.

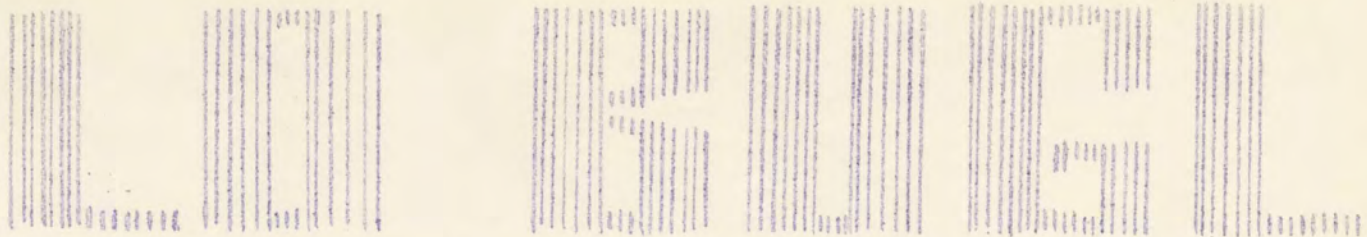
WORK SCHEDULES

No changes allowed while J. Sutherland is away.

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document

Vile

THE



NASA - BOEING - JPL

September 7, 1966

Pasadena Edition

Number 27

STAFF: Editor: Jack Sutherland, Schedules

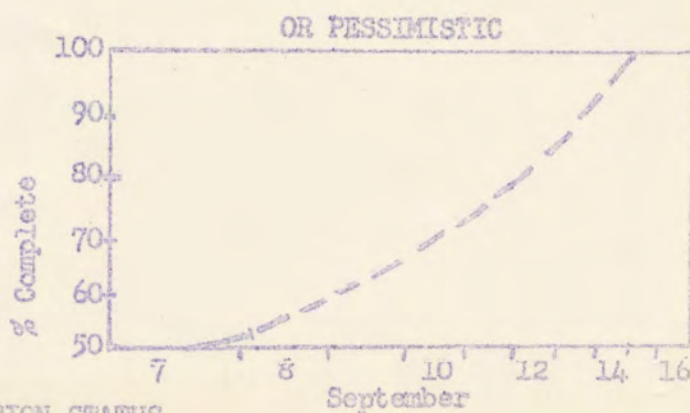
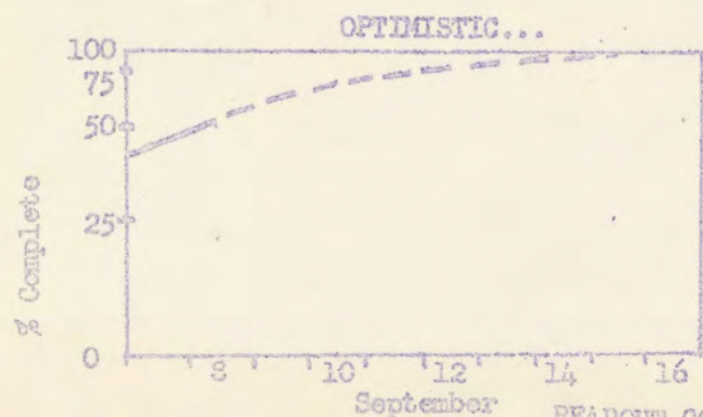
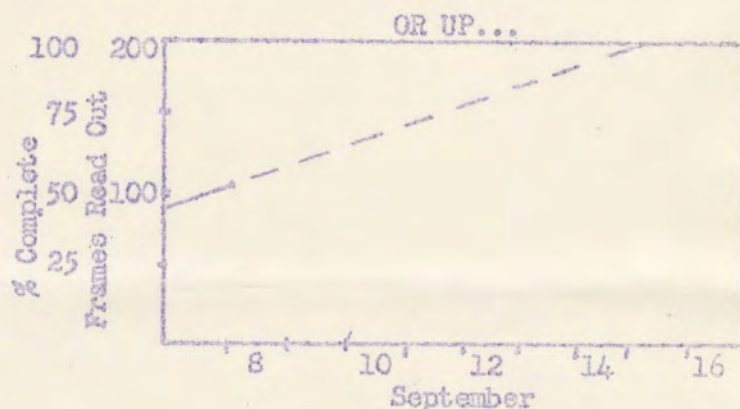
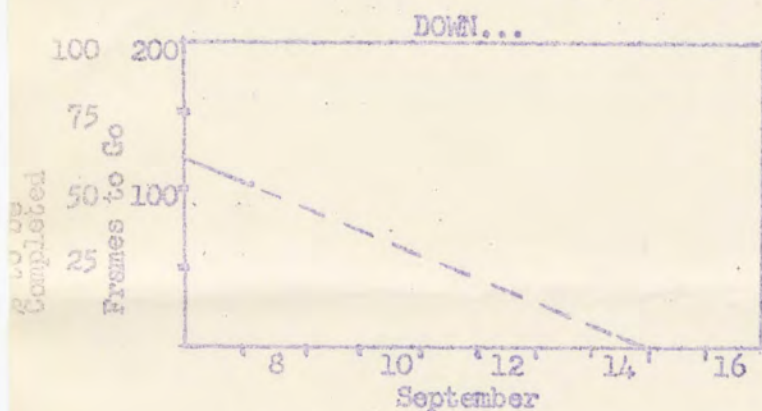
The LO BUGL is issued for members of the world-wide Flight Operations Team of Lunar Orbiter, for non-operational information only.

SPACECRAFT STATUS

Readout is still averaging 2.3 frames per orbit and completion of readout looks like the middle of 9-14 if temperature problem doesn't get worse. We're holding equipment mounting deck (EMD) temperature at 102.9° near the IRU but have pitched off-sun 27°. Even at the 27° angle there's enough power generated to give 28 volts at the buss and operate the readout system.

Latest radiation dosimeter readings are 136.5 rads at the looper and 10.25 rads at the film cassette, only slightly higher than 4 days ago. No radiation problems expected.

IT'S ALL IN HOW YOU SLICE IT...



READOUT COMPLETION STATUS

PRESIDENT ALLEN COMMENTS AT MEETING

"I am extremely proud of the Boeing team on the Lunar Orbiter Project. The fine teamwork of the Boeing group was very evident. From every person I talked with at the Jet Propulsion Laboratories, I was told of the fine attitude and the dedication of our people..."

. I want to compliment as strongly as I can the efforts made by the Space Division of Boeing on the Lunar Orbiter Project.

It is a terrifically significant achievement in Boeing history..."

COMMENDATION FROM DR. THOMPSON

In a letter to Mr. Allen, LRC Director Dr. Thompson wrote:

"While the Lunar Orbiter I mission has still many challenging tasks ahead before it is completed, I have just sent a message to the Langley Research Center Lunar Orbiter Staff commending them on their efforts to date, which have already produced a high degree of success, and expressing the hope that this effort will produce continued success of Orbiter I and complete success on remaining flights.

I also wish to acknowledge the efforts of the Boeing Orbiter team and to recognize that they have worked very hard and diligently in the tasks that are so essential in producing the results obtained. I feel that the appreciation and hopes I have expressed to the Langley team in my letter to them (copy enclosed) should also be expressed to the Boeing team and I hope that you will do this for me."

BUGL BLOWS FOR BOB SMITH

Our thanks go to the Boeing version of Bob Smith who wrote Saturday's BUGL while the "regular" responsible party was working a 12-week-schedule problem in Sunny Seattle. Incidentally, Bob told us on the phone this p.m. that the good old fashioned Seattle weather has returned and it's getting ready to be messy. Thanks again, Bob.

KNUTSON ON STAGE AT COCOANUT GROVE

Remember the item about DACON Evelyn Knutson in BUGL No. 14? Well, she made her presentation to more than 250 people on September 1 in the Coconut Grove, no less. You have to be good to get a billing at the Grove -- even with the Association for Computer Machinery. Buy Bien! DACON!

ODDENDA

One of the little gems awaiting us in the Seattle "IN" basket was the Change Memo covering "Initial Photographic Data Release". What they were actually talking about was Dennis Wood's Kludge, the Scan Converter Interface, and it took four pages to get to the point. Of course they added a few fine points about documentation and such and sent it through approval routing but when you boiled it all down, there was the Kludge, big as life. Sure was a lot easier to write it up for the BUGL.

COMMENTS OUT OF CONTEXT

If we keep sending so many commands to the spacecraft we'll have to send up some dramamine to combat motion sickness.

Watching the spacecraft go through each iteration of earthset-readout, earthset-readout, earthset-readout is almost as bad as watching P-3 simulation tapes. But not quite!

TIME PROBLEMS?

A day or so ago SPACECRAFT Dick Masterman was talking on the phone with his boss in Seattle when the boss man asked for a report by Thursday. Dick replied, "OK. What day is today? Boss: "Today is September 6." Dick: "Yes, but what day of the week?" Boss: "Tuesday. Why?" Dick: "Well, when I go out of the SFOF and my watch says 12 o'clock, I don't even know whether it's noon and daylight or midnight and dark so it follows that I don't know what day of the week it is." (Ed. Note: FPAC knows what time it is now - they're all on day shift.)

NOTE TO SFOF

With the perilune down to about 29.0 km, Art Garnett and Matt Grogan were wondering what you'd say if they took a little soil sample off one of the higher mountains on the backside of the moon. Just a little sample, mind you. They'd like to steal a march on Surveyor - or at least leave a little mark on the moon that would announce: "Orbiter I was here!" a la Kilroy.

SCHEDULE INFO

As Bobbie Burns used to say, "The best laid plans o' mice and men gang aft agley." So it is with our team schedules and we've added 5 minutes per team beginning with White on 9-9 to get back in sync with the spacecraft.

| | | | | | |
|------|-------------|------|-------------|------|-------------|
| 9-8 | 0320 - 1350 | 9-8 | ----- | 9-8 | 1335 - 0005 |
| 9-9 | 2350 - 1025 | 9-9 | 1010 - 2050 | 9-9 | 2035 - 0715 |
| 9-10 | 0700 - 1740 | 9-10 | 1725 - 0355 | 9-10 | ----- |
| 9-11 | 0340 - 1405 | 9-11 | 1350 - 0025 | 9-11 | 0010 - 1045 |
| 9-12 | 1030 - 2105 | 9-12 | 2050 - 0725 | 9-12 | ----- |
| 9-13 | ----- | 9-13 | 1730 - 0405 | 9-13 | 0710 - 1745 |
| 9-14 | 1410 - 0045 | 9-14 | ----- | 9-14 | 0350 - 1425 |
| 9-15 | 2110 - 0745 | 9-15 | 0030 - 1105 | 9-15 | 1050 - 2125 |
| 9-16 | ----- | 9-16 | ----- | 9-16 | 0730 - 1805 |

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Vile

The L. O. Bugl

NASA-BOEING-JPL

September 8, 1966

Pasadena Edition

Number 28

STAFF: Editor - Jack Sutherland, Schedules

The LO BUGL is issued for members of the world-wide Flight Operations Team of Lunar Orbiter, for non-operational information only.

SPACECRAFT STATUS

The spacecraft hopefully made its closest approach to the moon about 9 this morning (PDT) when predicted perilune was 27.0 km (less than 17 miles). We say "hopefully" because we get good tracking data only every 9th orbit and read photos on the other 8 orbits. We'll know the answers for sure about midnight tomorrow night.

Little change in other spacecraft status. We've pitched as far as 30° off the sun but the buss voltage has been 28 volts or more for most of the readout period. Readout has been normal.

READOUT-EARTHSET-READOUT-EARTHSET-READOUT

That second earth photo was taken at 1/50 second (instead of 1/100) and shows a glow around the earth - due to atmosphere? There's a more gradual shading of light into dark at the terminator and roughly equal clarity to the first one. Art Cosgrove, VIDEO at Woomera, said he could see land masses on Earth in the second photo and also in the 2nd readout of the first one. He says the latest earth and backside photos made all the effort worthwhile for him. "Good on yuh, Yank!"

The high resolution backside photos have made a lot of folks say they're happy they don't have to land on that rough stuff. The pics are excellent except for a little motion smear but they were taken from such a great distance that something less than detail is shown.

MISSION B PROGRESS

The latest planned delivery dates for Spacecrafts 5 and 6 are 10/17 and 10/18, respectively, at the Cape. These are based on photo subsystem delivery dates of 9/27 and 10/8 which include all agreed-upon changes. We hear there's a meeting next Monday to make sure the changes being incorporated will do the job so the high resolution lens will give better results next time.

KODAKERY

Jim Smith, White Team CAMERA, hurt his leg while "getting out of bed" and has missed several shifts. He's in good hands though - his family is here. Jerry Bronson, also of E-K, has been filling Jim's headset instead of returning to Goldstone. Thanks, Jerry, and good luck to you Jim. Hurry back!

Reassembled pictures at E-K look good, especially those from the moderate resolution camera.

RUMOR MILL

Understand we'll have to read out some of the Goldstone test film for calibration purposes after the last regular readout. That's five more frames, buddy. Is that true, Dick Erwood?

One "Site B-5" hi-res. photo may surprise several analysts. Seems the Camera Thermal Door was open right after the first Earth shot when the lens was pointed at the earth; the film advanced and the shutter tripped. So we have a "B-5" picture we aren't very proud of which shows a blurred earth-moon image. 's possible!

ODDENDA

Know what that whistle is on the OVCS that sounds like feedback? That's the signal for tea time at Station 41.

BUGL BUGGED

This "going home fever" is obviously highly contagious, especially to the Boeing girls. First there was Pattie Pierson, then Vi Warren, then Lee Brooks, and now Katie (Perle Mesta) Babunes, with Harriett Rounsley and Evelyn Knutson following Sunday by car (if you can call Evelyn's '66 T-bird a car). From the standpoint of ye olde ed, 2/3 of the essential part of the staff will have departed and a paucity of typing and other secretarial skills looms on the horizon. So you can see why the BUGL is bugged.

For the two soon-to-be travellers, Katie and Harriett, our thanks for your help in making this fun publication what it is -- including several of the Mother Hubbard columns and newspaper ads, and the feminine slant on many of the other items.

FLASH 8:15 PDT (9-8-66)

Station 61 suffered a temporary interruption of transmission as a result of the failure of couplers on the heat exchanger water line. The transmitter will be out of commission for an undetermined period of time; possibly as short as one hour.

SCHEDULE PERTURBATION DEPT.

Times have been adjusted 5 to 15 minutes, starting with 9-10 (White).

| <u>RED TEAM</u> | | <u>WHITE TEAM</u> | | <u>BLUE TEAM</u> | |
|-----------------|-------------|-------------------|-------------|------------------|-------------|
| 9-9 | 2350 - 1025 | 9-9 | 1010 - 2050 | 9-9 | 2035 - 0715 |
| 9-10 | 0700 - 1740 | 9-10 | 1725 - 0400 | 9-10 | ----- |
| 9-11 | 0345 - 1415 | 9-11 | 1400 - 0035 | 9-11 | 0020 - 1055 |
| 9-12 | 1040 - 2120 | 9-12 | 2105 - 0740 | 9-12 | ----- |
| 9-13 | ----- | 9-13 | 1745 - 0420 | 9-13 | 0725 - 1800 |
| 9-14 | 1425 - 0100 | 9-14 | ----- | 9-14 | 0405 - 1440 |
| 9-15 | 2125 - 0800 | 9-15 | 0045 - 1120 | 9-15 | 1105 - 2140 |
| 9-16 | ----- | 9-16 | ----- | 9-16 | 0745 - 1820 |

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THE

LO BUGL

Wile

September 9, 1966

Pasadena Edition

NASA-BOEING-JPL

STAFF: Editor - Jack Sutherland, Schedules

Number 29

The LO BUGL is issued for members of the world-wide Flight Operations Team of Lunar Orbiter, for non-operational information only.

SPACECRAFT STATUS

No significant changes in system performance, attitude, or temperatures. Readout is 67% complete. We're even using the tracking and command updating orbit for readout now. That means readout every orbit and hope to finish by the middle of 9-14. At 100 minutes of readout per orbit we should be able to do it and also readout the Goldstone test frames for calibration. One suggestion to save time winding the film back is to leave the Readout Drive on during occultation.--- If we do, would the battery voltage stay high enough to keep from burning out the motor?

Computer-wise, we're going to switch over to the "W" String Monday and have limited 100 wpm TTY support so Surveyor can get ready for the 9-19 launch. Looks like we've lost our top-dog position and Jess Timmons will have to start "negotiating" for computer time again.

BUGL BLOWS FOR CAFETERIA STAFF

The good people who work behind the cafeteria counter have done a lot to ease the strain of our odd-ball shifts by working 10 to 14 hours a day, seven days a week, to keep us fat and sassy and we'd like to salute them for their part in the LO program. You all know Marcella Anderson and Victor Black on the late-late shift but may not know John Sherman on the swing shift in the galley. We understand that these three haven't had any time off since Mission A started, not even to test-drive Marcella's new Buick. Then there's Raymond Long at the grill and Newton Tibbetts behind the cash register at night with the able assistance of Pauline Hill and Maxine Schull. Why not tell 'em thanks when you go through the line, huh.

MADRID IN HOT WATER

When the coupling in the transmitter heat exchanger gave way last night and dumped cooling water all over the place, the first reaction was that Station 61 would be out of action for the rest of the night at least. However, they went to work and replaced the faulty coupling, filled the system with water, and bled the air, losing only about 9 minutes and 46 seconds of that valuable readout time. Transmitter was off the air for about 1-1/4 hours, most of which was required to refill the heat exchanger with water. Muy bien, amigos. Well done.

THAT TIRED FEELING

After a while on these "rotating" shifts, you not only tend to lose track of what day it is as Dick Masterman observed a couple of days ago, you also tend to lose track of whether you are fresh from a good day's sleep or supposed to feel tired and go home and go to bed again. Ain't Nature wonderful?

MISCELLANY

Carol has a new ACEY-DEUCY schedule ready for publication.

"This AGE-2 status report is coming to you direct from the Boredom Room of Anell, Blissell, Sanborn, Garnett, Erwood, and Peterson."

MYGRANT WORKER REPORT

Buddy DeRyder (our Virginia Boy) and family left at 5:00 a.m. Friday for his home town "Phoebe" Virginia. After touring San Francisco, Yellow Stone National Park, Mount Rushmore and the Black Hills, they will arrive home September 10, if they don't get on the wrong "turnpike".

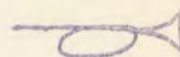
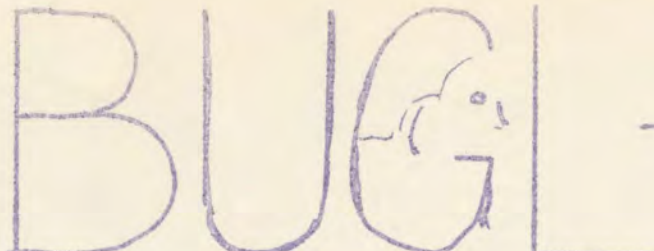
Also would like to congratulate Buddy on his promotion (?) to Asst. SPON - we'll be looking for you back in October Buddy.

SCHEDULE STATUS

Eagle-eyed Dennis Doe picked up the BUGL's goof for the day and gets a day off for his efforts. --How would 9-11 be, Dennis? We just put the 9-12 Blue schedule on 9-11, that's all. So today we'll move it back to the 12th where it belongs.

| | | | | | |
|------|-------------|------|-------------|------|-------------|
| 9-9 | 2350 - 1025 | 9-9 | 1010 - 2050 | 9-9 | 2035 - 0715 |
| 9-10 | 0700 - 1740 | 9-10 | 1725 - 0400 | 9-10 | ----- |
| 9-11 | 0345 - 1415 | 9-11 | 1400 - 0035 | 9-11 | ----- |
| 9-12 | 1040 - 2120 | 9-12 | 2105 - 0740 | 9-12 | 0020 - 1055 |
| 9-13 | ----- | 9-13 | 1745 - 0420 | 9-13 | 0725 - 1800 |
| 9-14 | 1425 - 0100 | 9-14 | ----- | 9-14 | 0405 - 1440 |
| 9-15 | 2125 - 0800 | 9-15 | 0045 - 1120 | 9-15 | 1105 - 2140 |
| 9-16 | ----- | 9-16 | ----- | 9-16 | 0745 - 1820 |

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September 10, 1966

Pasadena Edition

NASA-BOEING-JPL

STAFF: Editor - Jack Sutherland, Schedules

Number 30

The LO BUGL is issued for members of the world-wide Flight Operations Team of Lunar Orbiter, for non-operational information only.

PERILUNE INCREASES -- AT LAST

Perilune and Apolune may sound like members of a vaudeville team but they keep FPAC on the hot seat every once in a while. Eliminating the tracking orbit made it more difficult to get a good fix on perilune altitude but we're now certain that it has "bucketed out" at about 27.3 km and is on the increase. It's now more than 32 km and should increase to about 50 by the time readout is finished, starting to decrease again about September 17. We had 50 minutes of two station tracking tonight when the spacecraft was in the moon's shadow and got everything pinpointed again, right where it was predicted to be.

ANOTHER CONTRACT REQUIREMENT COMPLETED

Technically, the contract requirement to read out all of the Mission A films was completed tonight at 10:44 p.m. (PDT) 9/10 with the Site A-1 frames. We have about 51 frames left to go which, with the Goldstone test film, will take until about 9 a.m. Wednesday morning to read out. That means Red Team will finish its last Mission A shift at 2120 Monday evening, White at 0420 Wednesday morning, and Blue when the test film readout is complete. Looks like Red lucked out on their day off.

When SPACECRAFT "Batman" Masterman announced on the intercom that the contractual readout requirement had been met, almost everyone in the SPAC area jumped up and said, "Then let's go home!"

SHALL WE GIFT WRAP IT, BILL?

After the last readout there are some special experiments which will be performed by a special crew and after that we'll wrap the thermal blanket tight, tie the two antennas in a bow and notify Bill Boyer to come and take his slightly used spacecraft home.

Also on the wrap-up subject, the Seattle Operations Center called CREW CHIEF Marsh Gregory to ask that the teletype be shut off from 4:30 p.m. Friday till 8:00 a.m. Monday. Marsh replied with the obvious deduction, "Then this must be Friday. 'Bye, SOC."

PROGRESS REPORT

The Dennison Copier between FPAC and the Mission Control Center has run more than 42,000 copies for us in the past 6 weeks. Even at 10 copies per original that's a lot of copies in such a short time. Ought to weigh as much as the spacecraft by the end of the mission.

PHOTO READOUT POLICY

There's a memo out over Bill Boyer's signature that says in part, "Photo Readout will continue even if data is lost by ground recorders, FR-900 and/or GRE. That is, no requirement exists for going back and attempting to read out a frame that was not recorded on the ground." Reason given is, "...operational constraints facing the Project." Maybe Bill wants to go home too?

DEAR BUGL:

Should I break my neck and get writer's cramp rushing to get my final report completed and typed before I leave for Seattle or can I get it typed in Seattle?

SPAC Anna Lyst

Dear SPAC Anna

Don't do anything rash with your precious neck but you might consider mailing your hand-write to someone in Seattle for typing if Virginia and Carol haven't time.

BUGL

SCHEDULE STATUSRED TEAMWHITE TEAMBLUE TEAM

9-11 0345 - 1415

9-11 1400 - 0035

9-11 _____

9-12 1040 - 2120

9-12 2105 - 0740

9-12 0020 - 1055

9-13 1745 - 0420

9-13 0725 - 1800

9-14 0405 - 1440

LAST DITCH SCHEDULE

A major change has been made in the printed schedule, to-wit: Nothing is shown after final readout. -How do you like those apples?

L.O. PRESTIGE CRUMBLES SLOWLY AWAY

Say Bunkie, did you have trouble getting past the guard into the special parking lot today? And they still wouldn't let you up on the second floor without a white badge? And the cafeteria was closed when your spacecraft was occulted and you had a chance to eat? Any your spacecraft is getting warmer and warmer? And it looks like your little pet will plow a furrow on the moon in six or seven months? And you're working too hard keeping its attitude, power needs balanced? And the cafeteria will be closed all day Sunday? And the Seattle Operations Center is back on a forty hour week and you're still losing sleep? And your secretary's gone home and you can't get your report typed? And Repro lost your masters? And you don't have enough priority left to get computer time? And the TA's aren't around any more? And FPAC went home? And they say you have to come back and train for the "B" mission? Is that what's bothering you, Bunkie? Well, hold your head up high. Keep your eye on the sky. And remember, you won't have to watch that thing much more.

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LO BUGL

September 11, 1966

Pasadena Edition

NASA-BOEING-JPL

EDITOR: Jack Sutherland, Schedules

Number 31

The LO BUGL is issued for members of the world-wide Flight Operations Team of Lunar Orbiter, for non-operational information only.

SPACECRAFT STATUS

Couldn't dig up any dirt about the EMD temperature, buss voltage, readout status, etc. that you haven't already read so we decided upon a different tack and learned that our strongest received signal strength was -90.8 db which came in via Station 41 a week or so ago during readout. By contrast, when Galileo J. Burmeister made a star map while the spacecraft was pitched off-sun, we rolled through both nulls of the Low Gain Antenna and lost "lock" twice. (No reflection upon G.J. intended--it's just a fact of life.)

MORE STAR MAPS MADE

(and others)
Galileo J. Burmeister/made a star map yesterday while the spacecraft was pitched off the sun and located three bright objects which he feels were Earth, Jupiter, and Sirius but hasn't positively identified yet. He made another star map today using the Sun and Canopus as reference and located five other bright objects, also not yet identified for certain. A star map, by the way, is made when the Canopus Sensor is on and the spacecraft is in the shadow of the moon. A slow 360 degree roll of the spacecraft produces a graph of the dark and bright areas "seen" by the star tracker. Using the proportionate intensity data generated by the star identification program (SIDL) we can identify a bright object both by relative intensity (voltage) and by its position relative to Canopus and the Sun. Making such a map takes 12 minutes plus appropriate hardware and software. Analyzing the results takes talent, plus enough time to sit down and figure out what the data is telling you. Chicken Delight/arrived at this point and we now know the identity of the five other bright objects. They included Betelgeuse, Capella, and Rigel, and two identified only by numbers and code letters.

MODE 2A COMMAND TRANSMISSION

A day or so ago the DSS 12 team had three minutes to get a command "ACQUIRE SUN" sent to the spacecraft and verified so they used Mode 2A for what we think was the first time of the mission. Mode 2A tells the spacecraft to verify automatically and execute without further instructions.

SLENDERIZED BUGL

We've found that it takes less ditto paper, less postage, fewer staples and less effort to type the BUGL on two pages instead of three so our Scottish ancestry bade us forego the third page. Will reduce frequency too, after Wednesday, especially during vacations.

BUGL COMPLIMENTS FLIGHT OPS TEAM

Seems that every time the BUGL compliments someone or some operation, they (or it) go home or are cut off. F'r example, we touted the TA's and their service was withdrawn; the cafeteria folks and our extra service was cut off; FPAC and they blew the place; and even the computer operations have become less available since the latest BUGL item about their effectiveness. So the BUGL hereby compliments all those members of the Flight Ops team who want to go home (including those at the stations). Who knows, maybe the charm will work for you too. Besides, you do kind of deserve a compliment or two, don't you.

ODDENDA

During one of the busier times early in the mission when both Red and White teams were in the SFOF at the same time, the combination was christened the "Barber Pole" team because it was red and white and going around in circles.

A fancy "HERO" medal was presented to Larry Tietze a few days ago and he was dubbed "Canopus Rex". Only the SPAC phantom knows why.

Latest readout status report is in Russian for "clarity". Or at least Bill Swenning said it was Russian and he's been there so he must be an authority. Which reminds us that each of you will be regarded as an authority on all phases of space flight, especially by your young children. When they ask you to address their grade school science class, accept gracefully but be sure to take along a set of BUGLs in case you forget what a star map and a kludge are. And remember that in all probability you do know more about the L.O. SFOF operation than anyone in the class and maybe even the teacher too. That thought should give you confidence in your ability to snow them at will.

QUICK-WITHDRAW ARTISTS

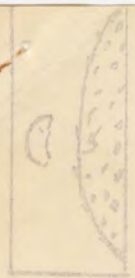
Be sure to obtain a clearance from your area director before making final plans for your departure for home. There are still a couple of tests to be run after the last readout but the team for that work will be a composite we'll call the "Mop-up Special". We did perturb team schedules once more to make up for Red having the first "day off". It cuts the length of the last shift for each team to two orbits and is per Jack Graves' direction.

| | <u>RED TEAM</u> | <u>WHITE TEAM</u> | <u>BLUE TEAM</u> |
|-----------|-----------------|-------------------|------------------|
| Mon 9-12 | 1040-2120 | 9-12 2105-0740 | 9-12 0020-1055 |
| Tues 9-13 | 1745-0100 | 9-13 ---- ---- | 9-13 0725-1800 |
| Wed 9-14 | ---- ---- | 9-14 0045-0740 | 9-14 0725-1500 |

Mop-up Special team will work:
Thursday 9-15 0700-1630
Friday 9-16 0700-1500

Rumor has it that there's to be a party at the LaCanada Country Club 5-8 p.m. Wednesday, but all the plans haven't been firmed up. Oh yes, there's a United flight that leaves at 8:45 p.m. so you can go to the party and still make it home the same night. Anyone need a ride to the airport?

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THE LO-BUGL

VIELE

October 7, 1966
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Number 35

NASA - BOEING - JPL

The LO BUGL is issued for members of the world-wide Flight Operations Team of Lunar Orbiter for non-operational information only.

HERE WE GO AGAIN

The party's over and we've had time to recover and maybe even take a bit of vacation. The time has already begun to get short before the next training session down south in Dodger territory, so let's get all the details squared away and make sure all the thrusters are working so the next mission can be even more successful than the first.

SPACECRAFT STATUS

Orbiter I (Mission A)

It's still orbiteering around the moon right on schedule. Getting a bit warmer as the thermal paint degrades, but still working O.K. We have some slight evidence of battery degradation, too, but the N₂ usage has been even better than expected. We still have about 2.4 pounds of N₂ left at about 500 psi, which could give as much as 130 days of extended mission life.

So that we don't end Mission A with a "chatterbox" spacecraft which can't be kept quiet, there's a stored program command (SPC) in the programmer that will shut down the exciter on November 4th if the transponder can't get the message through. It's a pretty smart spacecraft that knows when to keep quiet.

Ray Stevenson, Marcel Afker, John H-os and Owen Bergman are keeping watchful eyes on the smart one during the extended mission, together with Bob Peterson, Jess Timmons, Russ Sanborn and Buddy DeRyder.

Orbiter II (Mission B)

Photo system is due at the Cape next week; may end up with the S/C 6 unit in S/C 5. Rick Rasco and his gang will be watching especially for proof that the V/H sensor and camera problems have been fixed.

To help you spacecraft types by keeping the S/C EMD somewhat cooler next time, a special thermal paint will be applied at the Cape. Illinois Institute of Technology scientists will mix it in Chicago, rush it to the Cape and apply it within hours after mixing. Sounds like they must have discovered the secret formula for Kickapoo Joy Juice with all that special handling. (Late report says the paint expert is driving the the Cape with his potions and will mix the product on-site and apply it. Reminds us of the "Wizard of Id" in the Sunday Times.)

NEW BUSINESS POSSIBILITIES

1. We have submitted a proposal to NASA to refurbish S/C 2 for flight and then launch it as Orbiter VI.
2. A set of photo system Ground Reconstruction Equipment (GRE) is to be installed at JPL soon, hopefully in time to support the November launch readiness.
3. Maybe it's wishful thinking, but we hear there's a lot of customer interest in a Lunar Orbiter-type of vehicle for Venus '70 - '72 and Mars '71 - '73 exploration. We have a

4 month study contract and are convinced an Orbiter could furnish a lot more data about these planets than another fly-by mission. NASA Advanced Programs Mgr. Pit Thom is due in Seattle next week to talk about the possibilities with Tom Yamauchi, et al. Good Luck, Tom!

INCENTIVE PAY-OFF?

Some of the Aero-Space Group software people had a free (?) prime-rib dinner because of a statement someone once made that the L.O. software was much too complex and voluminous to be developed in the available time and besides, it won't work. But it was....and it didhence the dinner.

POST-MISSION OPERATIONS CRITIQUES

Had an in-house TBC post-Mission A critique last week (9-29 and 9-30) to develop an agenda. This week everybody gets into the act at a symposium (10-6 and 10-7) at which NASA and JPL will join us in looking for the better way to do things. It's good to see so many of the NASA/JPL folks here at the same time.

SOFTWARE DEMO RUE

Bill Burr and at least 8 other Seattleites are working with Jan Charnell & Co. checking out software changes. They're planning to demonstrate the revised software to NASA starting on 10/14.

ATTENTION DODGER FANS

Our Pasadena reporter says almost all the \$25 World Series tickets have been sold and the next larger chair size is going fast at \$75 each.

PLANNING ONLY

Some possibilities that are being considered for the next training session are:

- a. We may read out Sites 4, 6 and 7 again.
- b. We may burn the engine again in an orbit transfer exercise.
- c. We plan to include spacecraft observation during the October eclipse in a training exercise.
- d. We may transmit commands to the spacecraft in a three orbit photo sequence.

These are only in the planning stage now. They may be accepted or rejected as training plans are solidified.

ORBITER MAPPED MORE AREA THAN TEXAS PLUS ALASKA

Jess Timmons reported that the Orbiter I photos mapped more than 2 million square miles of the lunar surface - almost three times the combined area of our two largest states. Actual target areas comprise only about 16,000 square miles.

RF SIGNAL STRENGTH

The DSIF stations normally beam a radio signal to the spacecraft with 5 to 10 KW of power behind it so we thought we'd find out how little we could get by with. We cut power output to less than $\frac{1}{2}$ watt before we lost command. Commands were actually passed via the "uplink" at $\frac{1}{2}$ watt of transmitter power. Must have a pretty sensitive hearing aid on board.

CLOCK SYNC

Understand that DSN says clocks will be synchronized within 50 microseconds for at least 24 hours after each time correlation check.

SCHEDULE INFO

Weekly scheduling teleconferences between JPL, Seattle, EIR and Langley have been resumed and high spots yesterday were:

1. Transfer of LO operations from DSIF 61 to 62 is proposed for right after Mission B ends and could be completed the middle of January. DSN hasn't given final blessing yet.
2. We have asked that the outbound High Speed Data Lines be checked out by 10/14 but haven't received confirmation yet from the DSN folks. These HSDL lines would carry simulation data to the stations for processing and return to the SPOF via operational TTY/HSDL where it would add to the realism of simulation training exercises.
3. Reprogramming of the FDP-1 computer is nearly complete.

SECURITY VIOLATION - ALMOST

Thanks to our alert secretary, Doris Smith, the old BUGL editor avoided a security violation referring to a planned launch date. If you read L.O. Program Directive No. 1, dated July 9, 1964, you'll see that reference more precise than by quarter of the year is CONFIDENTIAL until 10 days prior to launch. NASA Chief, Dr. Webb refused to relax the contract requirement within the past two weeks, so it's still something to watch for. Thanks, Doris.

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