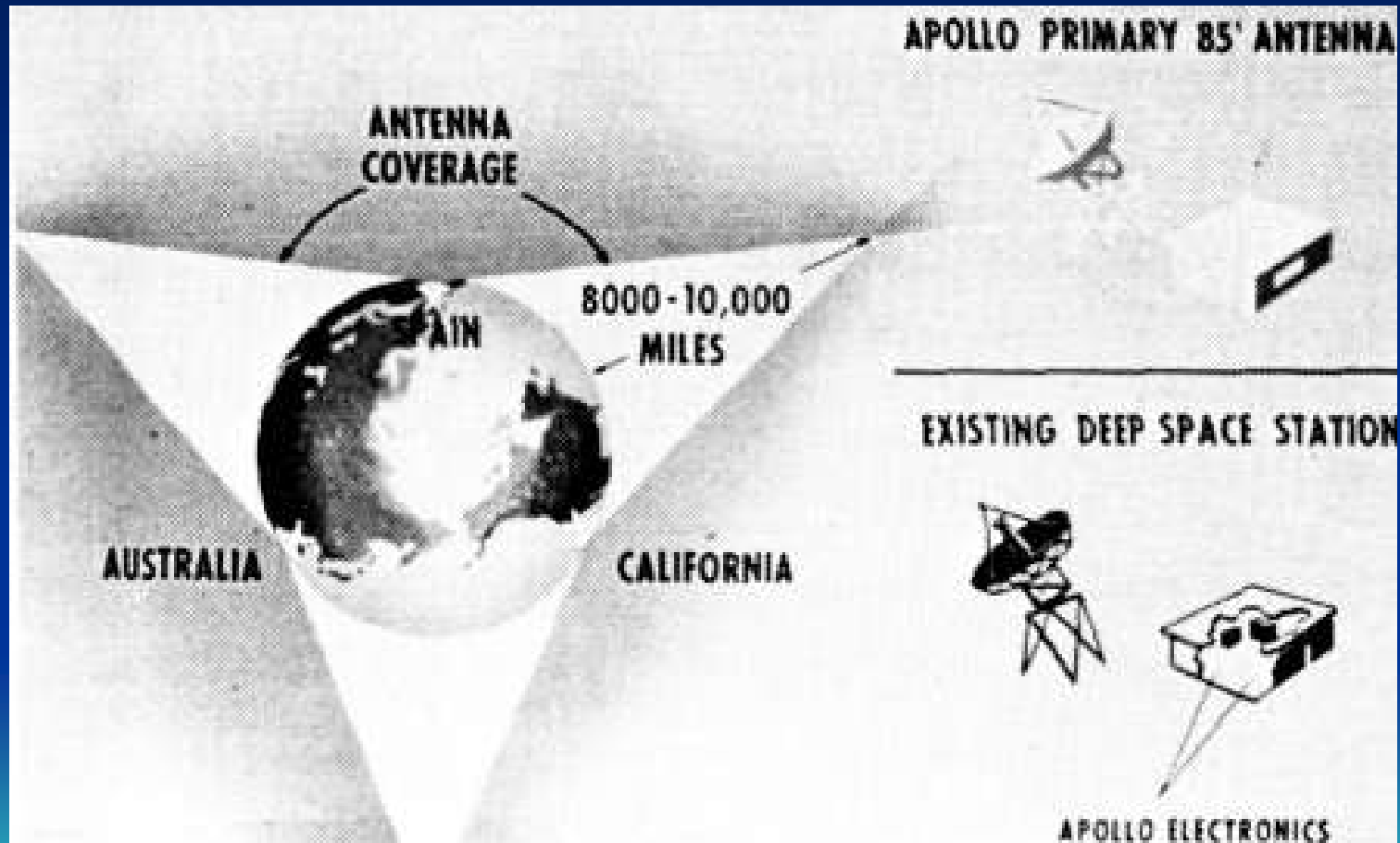


Apollo and the ACT

Or why did it happen here?



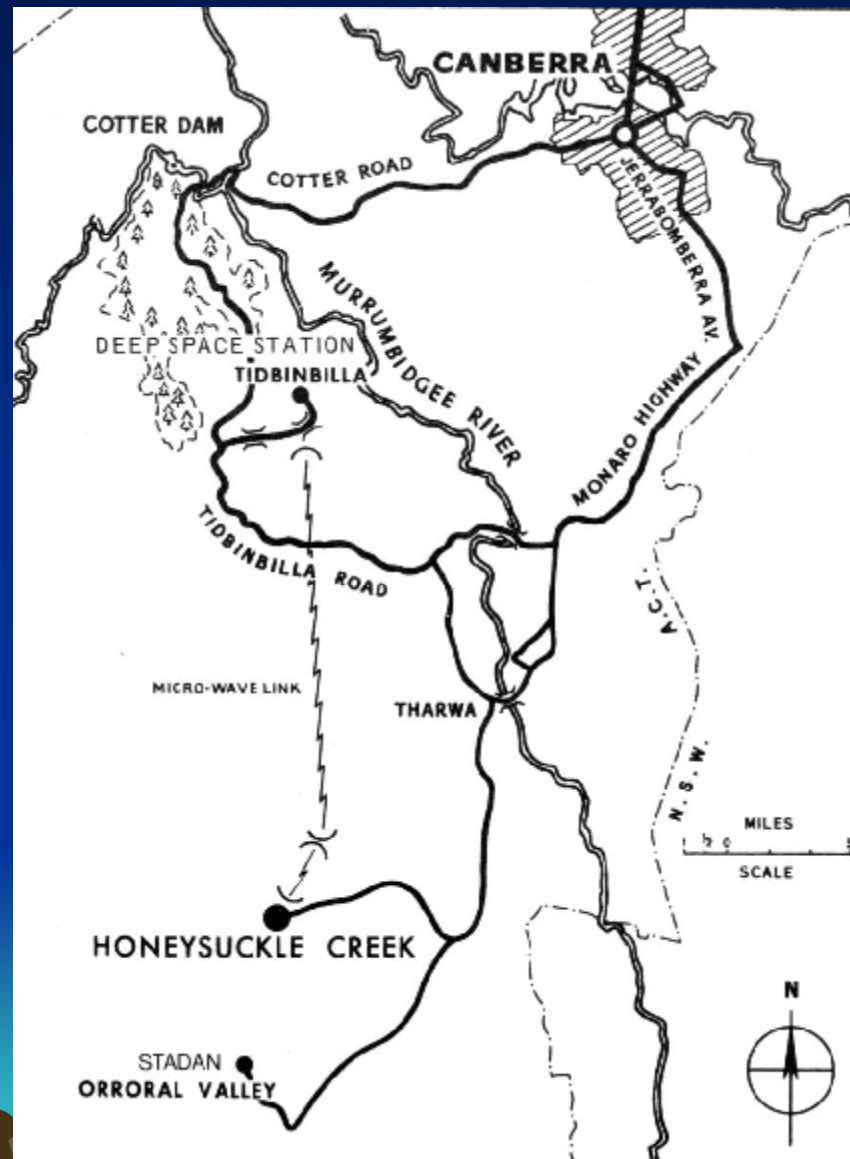
Three stations for continuous coverage at > 10K miles



Roughly 120 deg Longitude around the world



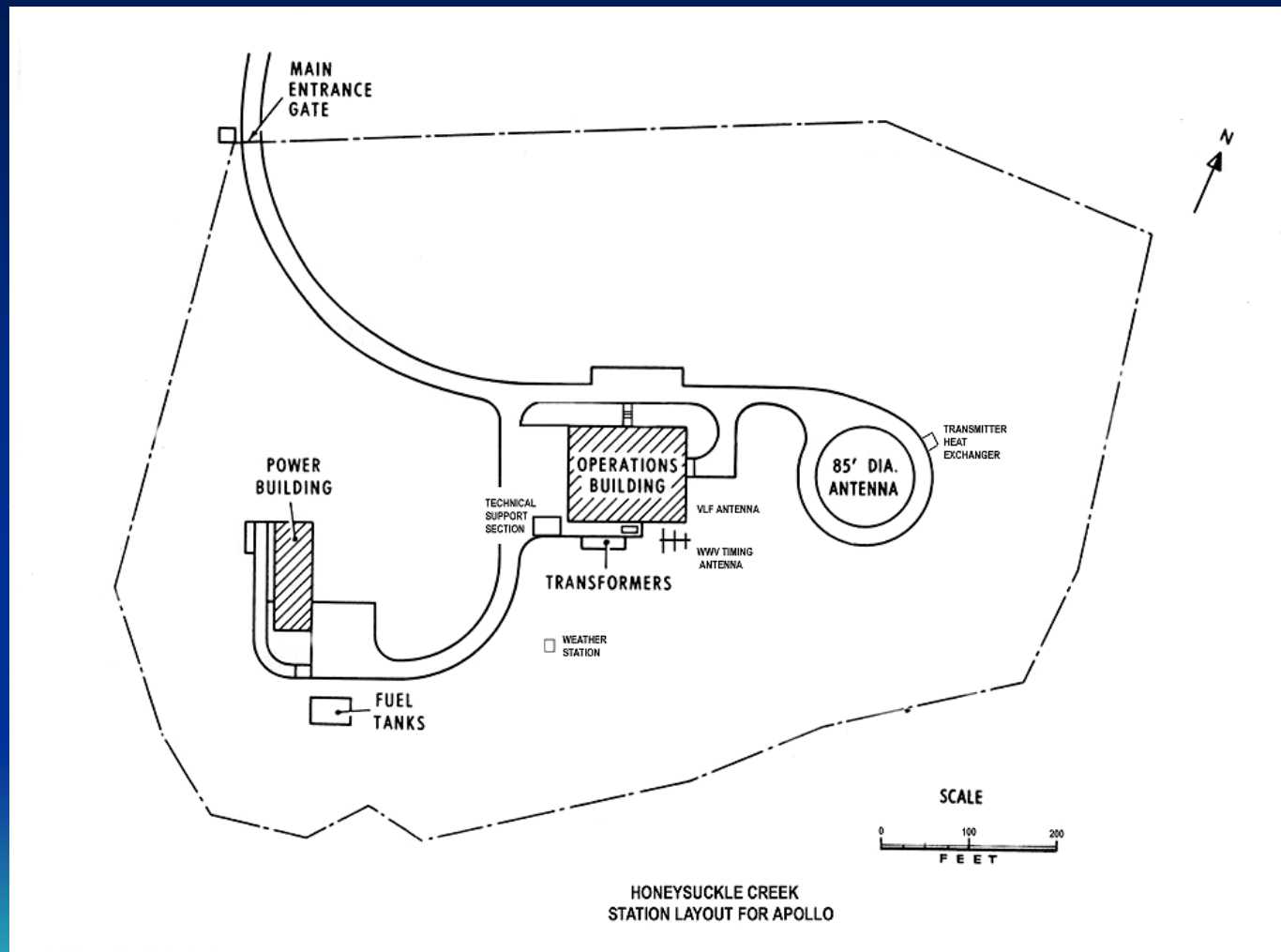
Map of the 3 tracking stations – around 1966



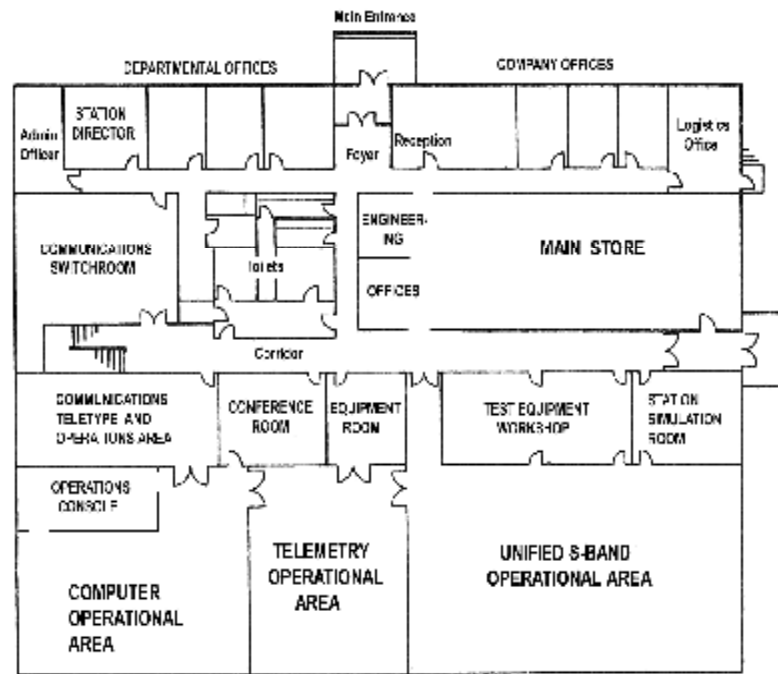
Honeysuckle in 1968



Rough Site plan for Apollo

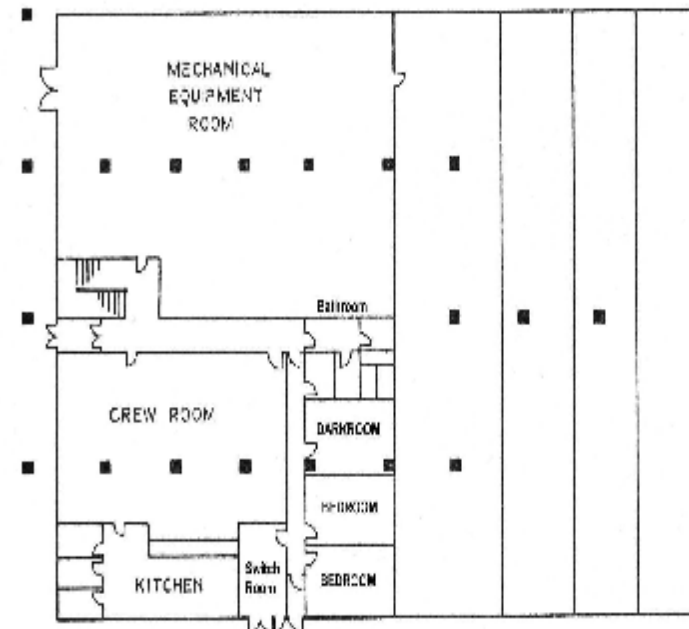


Honeysuckle Ops Building Upstairs & Downstairs



FIRST FLOOR

HONEYSUCKLE CREEK FLOORPLAN - APOLLO ERA



BASEMENT

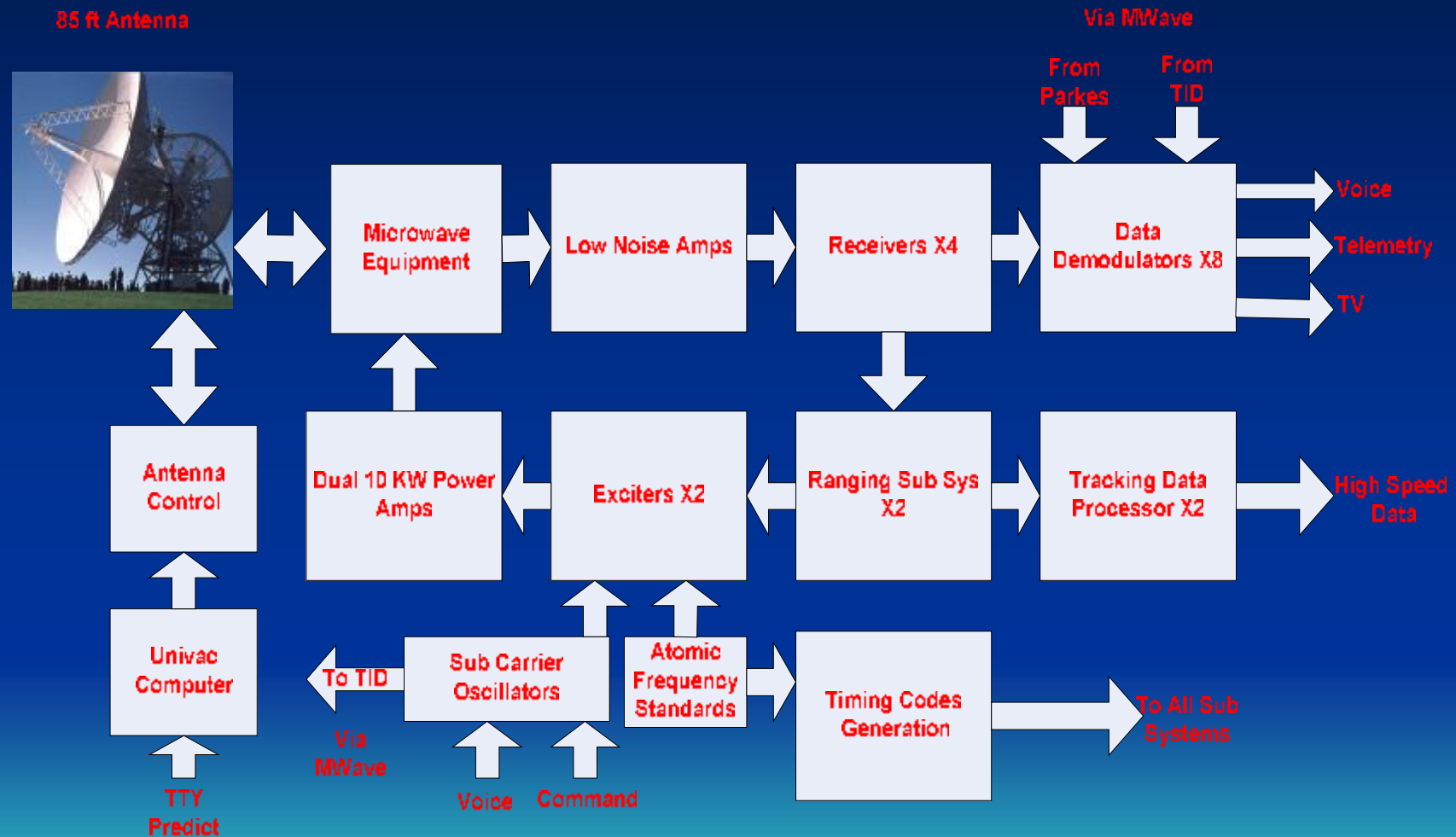
HONEYSUCKLE CREEK FLOORPLAN - APOLLO ERA



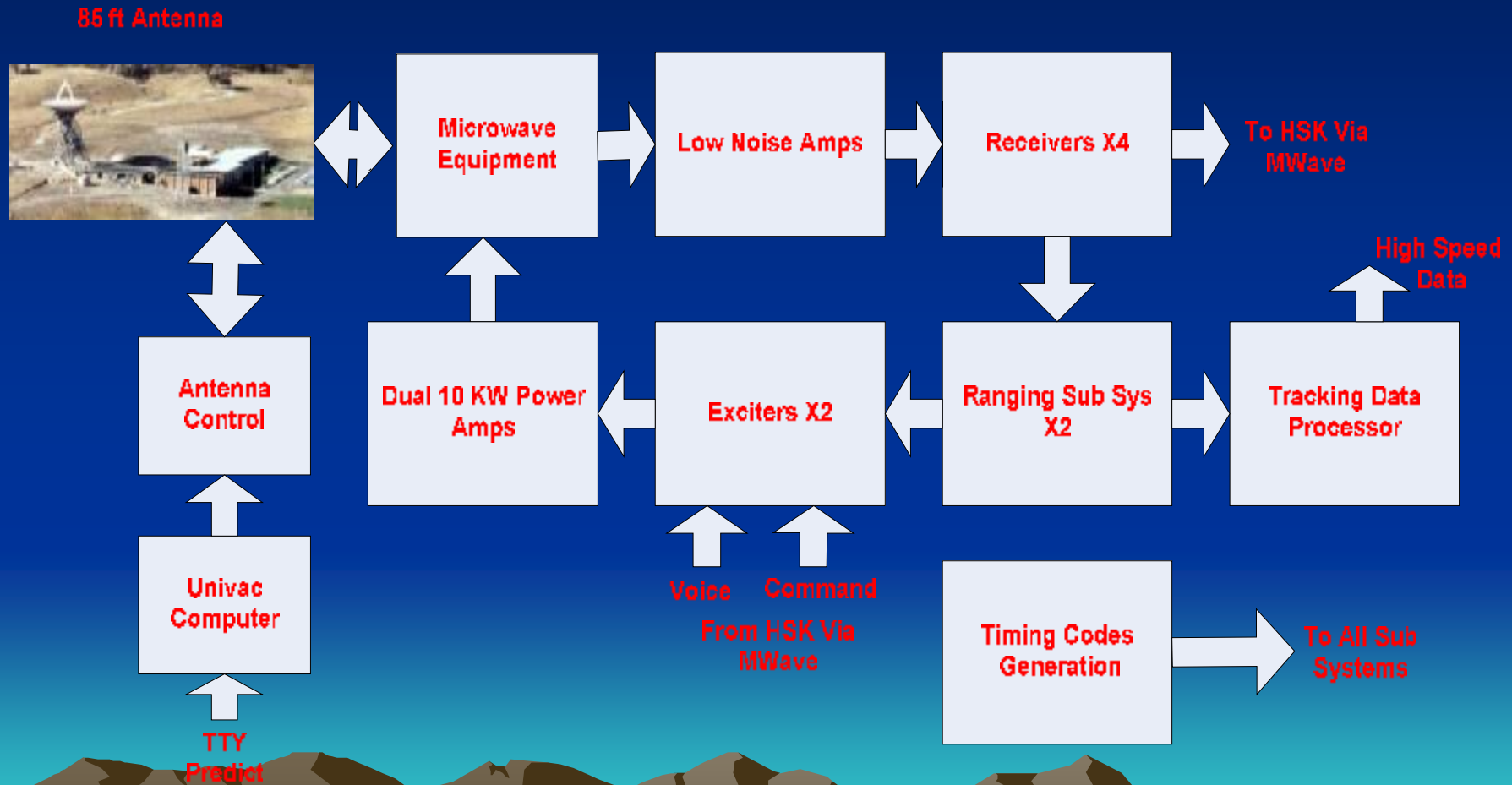
Opening day on 17 March 1967



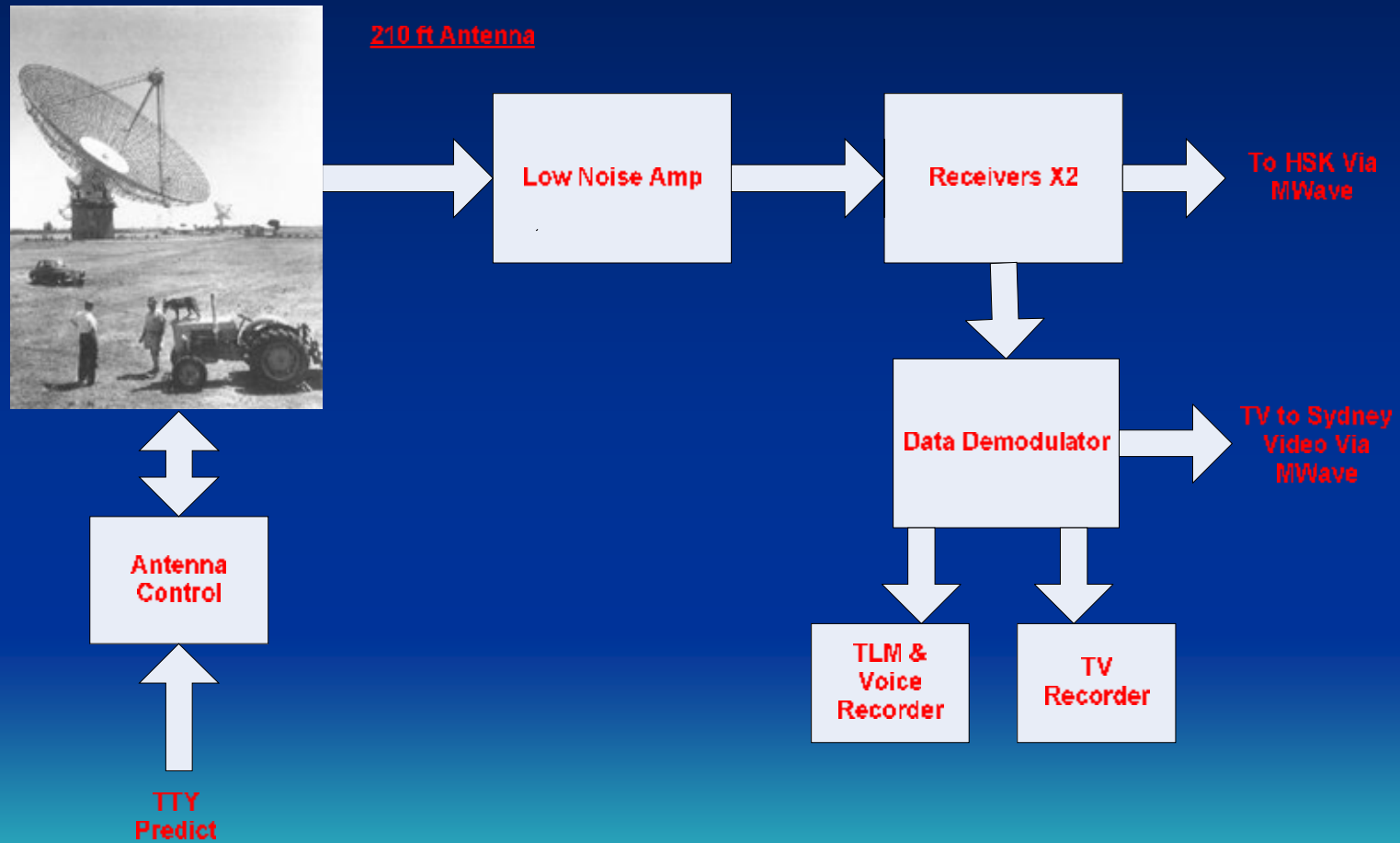
Simple HSK (Front end - USB) block diagram



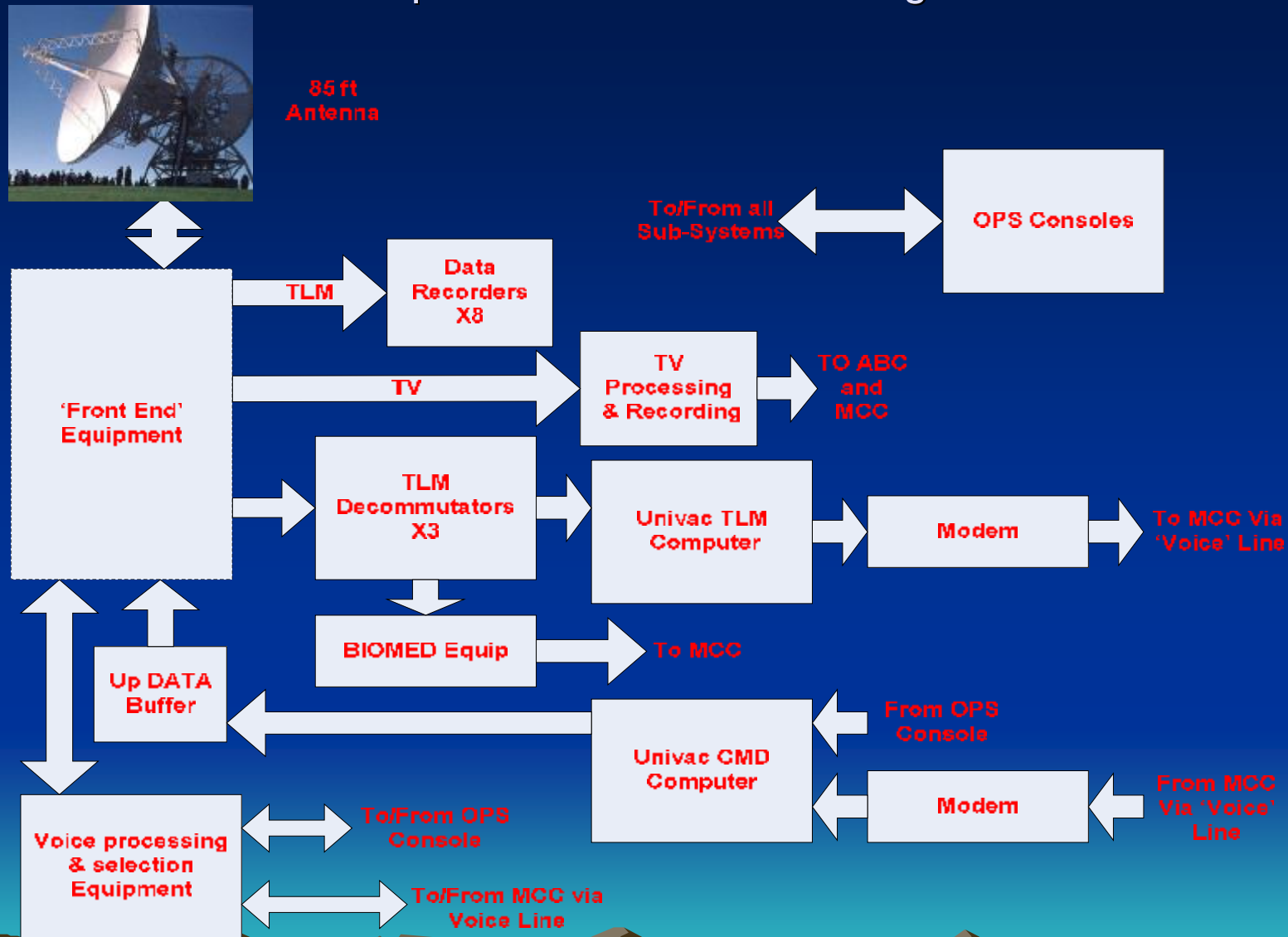
Simple Block diagram - Tidbinbilla



Simple Block Diagram - Parkes



Simple HSK overall block diagram



Some very simple computer statistics

- Ground sites – main computers were two Univac 642B systems one for command and one for Telemetry.
- 642Bs has a 2 μ Sec cycle time, 30 bit word length and 32Kwords memory (roughly 120KB) +Tape storage and 16 I/O channels.
- Later 64Kwords of shared memory was added
- Also 2 smaller Univac 1218 systems for antenna pointing calculations, Simulations etc.
- Houston used Univac pre-processors and IBM mainframes.
- CSM & LM spacecraft computers. 36,864 16 bit words of hard coded 'rope' program memory (approx 75KB), and 2046 words (about 4KB) of erasable memory. Each computer weighed 29.5Kg

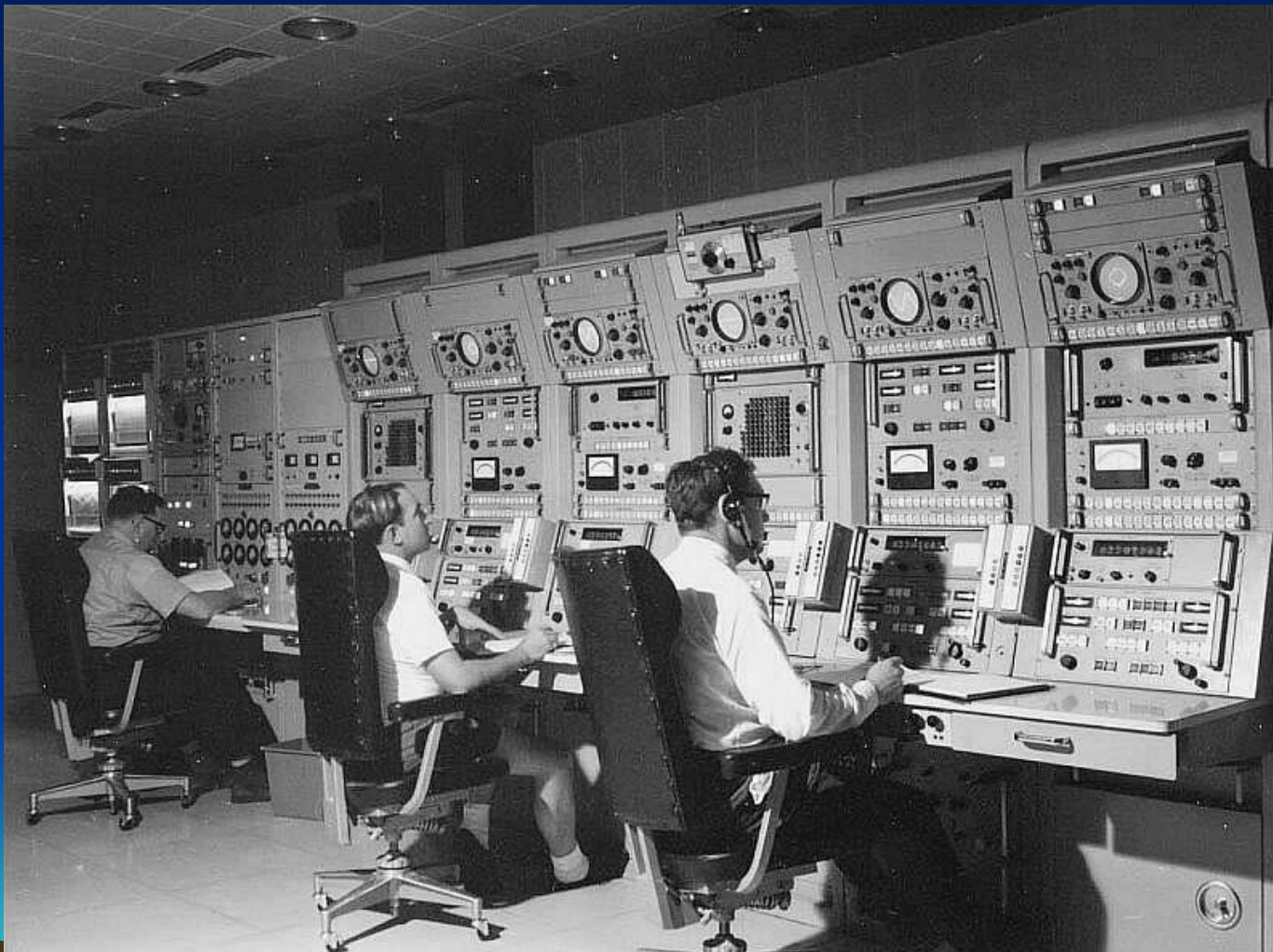
Tim Saxon at Servo console 1979



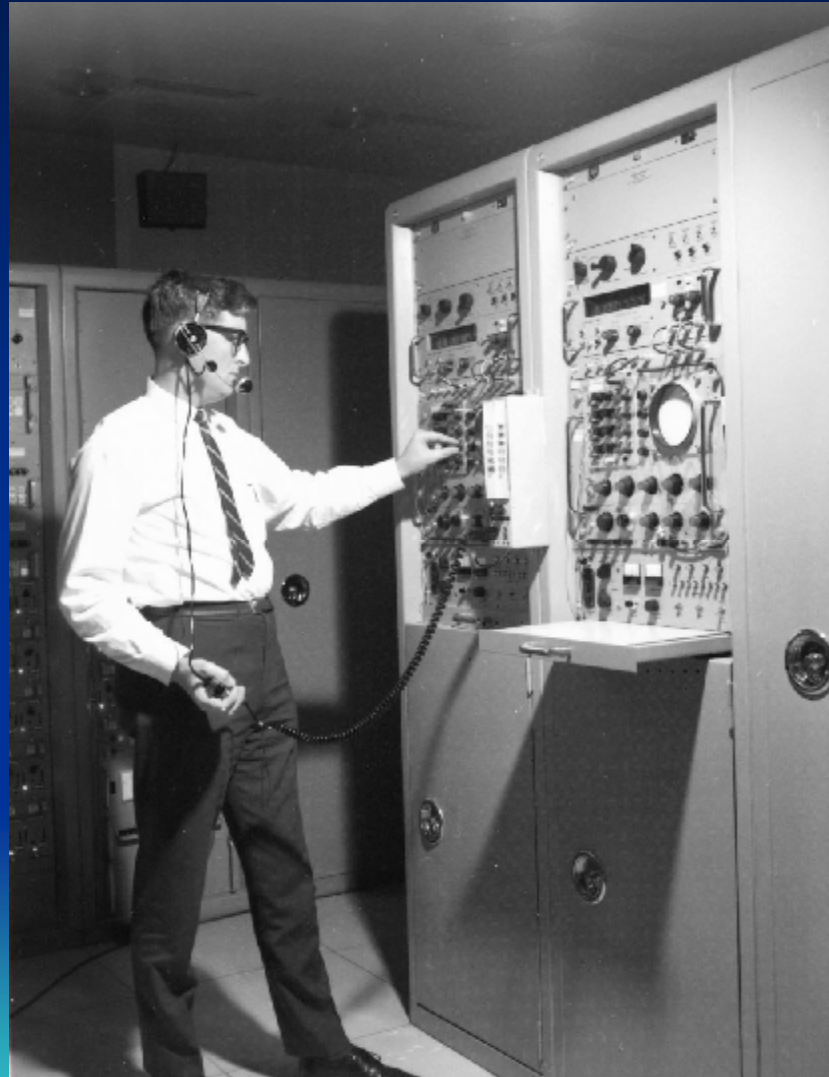
Real Antenna Operator



Receiver & Transmitter controls



Ranging equipment



Telemetry Equipment



Computer Equipment



Ops Console – Mike Dinn & John Saxon



On 'the Day' – A real Prime Minister at a real Tracking Station



Why did the first pictures come from Honeysuckle and the ACT?

- There were 5 (Lunar distance) stations 'in view'. Including 2 64m antennas and 3 26m
- Problems in California
- Moon not in view at Parkes – 30 deg minimum elevation limit
- Fire in the antenna transmitter at Tidbinbilla 2 days earlier
- So Honeysuckle pictures were chosen



10⁰¹ 21
 110 07 35
 05 53 12
 02 88 12
 15

DSIF LOG SHEET HSK SITE

15

DATE 21 Jul (GMT) LOG KEEPER SAXON

28255289

MISSION Lunar Surface & CSM a/c 17 Aug 68

949
 0839 24
 0308 24
 36

| GMT | EVENT |
|--------|--|
| LM | CSM L/O 17 (cont) |
| 0143 | Nascom relay verified. |
| 0146 | FM dump - 96 from 014313 THRU 15° Elev plane 014905. |
| 0150 | FM off |
| 0152 | TV off last signals on. |
| 0154 | Go for cabin depress. |
| 0201 | CSM LOS wing |
| 0202 | " AOS ") To LBR & R/V voice worked pseudo nascom |
| 021107 | HS Lb 00222 0904 2105 |
| 021906 | LAR Sun MCC |
| 0221 | 0.15 Deg offset in A |
| 0223 | -140 CSM droppings |
| 022330 | CSM LOS wing |
| 0225 | -025 X -0.5 Y |
| 0228 | CSM AOS HCA |
| 0244 | -100 FM on LM |
| | EVA EXCg & Worse on LBR |
| 0251 | CDR on LM porch |
| 025400 | TV ON |
| 025625 | CDR on Moon !!! Processing HSK 2 GDS Tr alternately |
| 0306 | Starts up using Pair TV & PAM - 90 dbm |
| 0325 | Video recorder VR 1100 red cannot ETO R/K |
| | 40 18. |
| 0340 | AOS stat |
| 034252 | CSM FM ONCMD |
| 034940 | FM carrier |
| 034525 | dump mod 32:1 |
| 0346 | 2106 LM H/s & 0023 |
| 03475 | LOS L FM & |
| 0349 | Nixon uplinking |

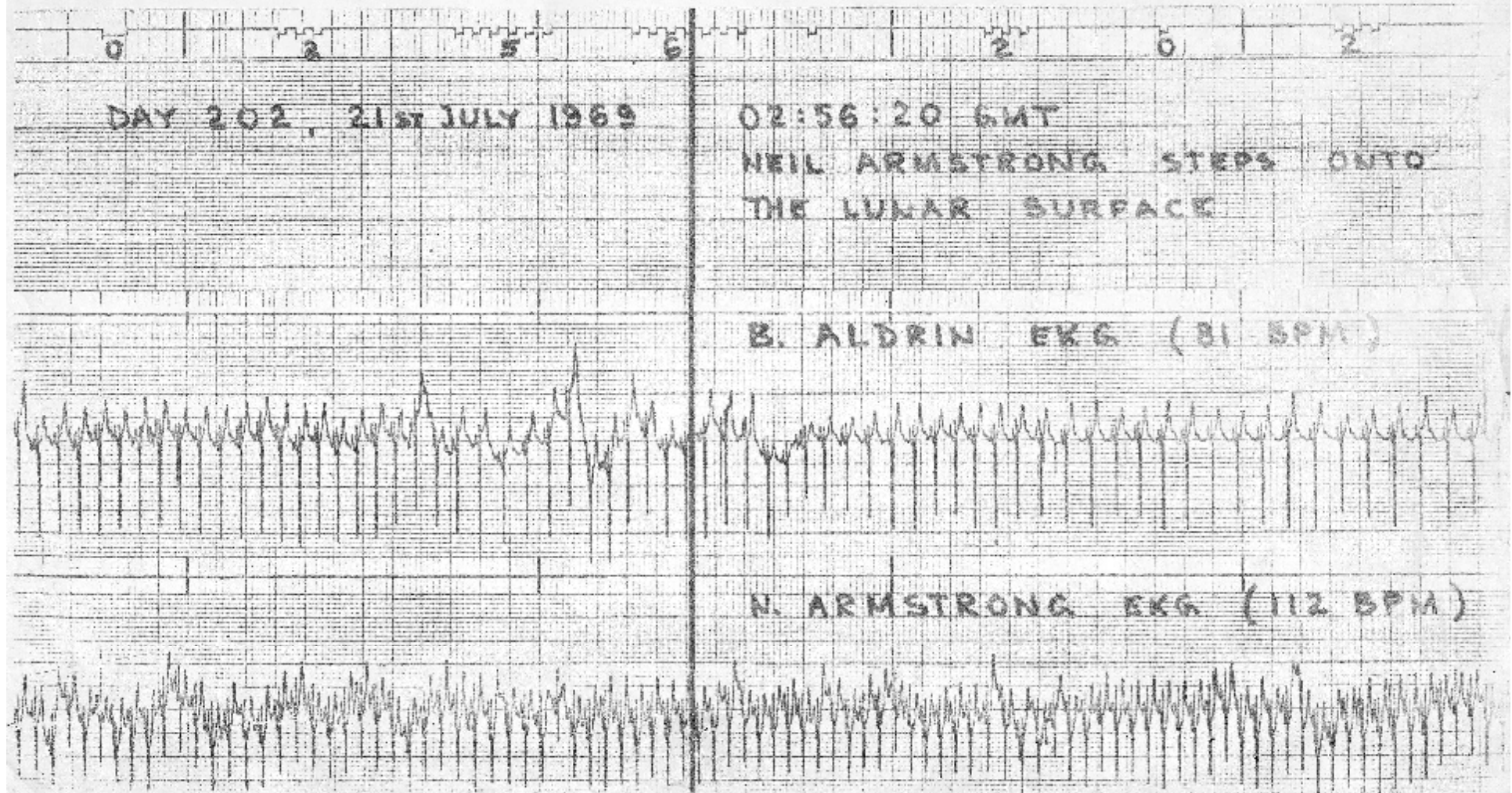
PLSS
 1.
 9 8
 80 50
 12

Console
 log for
 the first
 steps

Polaroid shot of TV monitor at HSK



Neil & Buzz's heartbeats



Communications people will relate to this

HSK007A
RR ACRO ANBE GCEN GGDS HMSC LMAD PGWM
DE AHSK 011
12/0633Z
FM STADIR/AHSK
TO PGWM/STADIR
INFO GGDS/STADIR
LMAD/STADIR
ACRO/STADIR
ANBE/STADIR
GCEN/CODE 810, 814.3
HMSC/FC DIV, E.FEWDEL FC2, D.YOUNG FS4

SECTION ONE OF TWO PAGE ONE OF THREE
AN ANSWER TO GWM MMR NCG-740 11/1000Z PARA 2.2 HERewith THE FOLLOWING

PRINCIPLES OF COMMUNICATIONS
OR (I'M ALRIGHT AT THE TEST-JACK)

AS WE CLUSTER ROUND THE CONSOLE
THERE'S A GLEAM IN EVERY EYE
FOR TODAY WE PROVE THE CIRCUIT
(OR AT LEAST TODAY WE TRY).
WE ARE GOING TO CHECK THE LINE-UP
ALL THE WAY FROM END TO END
- IT'S A NETWORK COMPETITION
YOU WIN ANY TIME YOU SEND.
THE SENDING END IS ALWAYS PERFECT
AND WE ARE THE SENDING SITE
SO REST ASSURED THE SIGNAL
WILL BE "LEAVING HERE ALRIGHT".

FOR WE ARE VIDEO CIRCUIT EXPERTS
(SAYS THE CHORUS OF OUR SONG)

| APOLLO HONEYSUCKLE TWX DISTRIBUTION | | | |
|--|---|---------|---|
| STADIR | / | FAC. | / |
| D STADIR | / | T.S.S. | / |
| | | QPS | / |
| CH. ENG. | / | LOGIST. | / |
| U.S.E. | / | SAO | / |
| PLAN | / | STAFF | / |
| CMPTRS | / | TEST | / |
| COMMS | / | TRAIN | / |

So was it all a Hoax?

- We should not give conspiracy theories credence by discussing – but I can't resist.
- 300,000 plus workers keep the secret for 40 plus years?
- If we were not told then we were fooled.
- So how was it faked for us at the ground stations?
- Would have been easier to just do the mission as advertised than to fake it.
- There was nothing secret on site – we would have been aware of data feeds for ever increasing spacecraft range, incredibly accurate doppler signatures, TV signals not coming via the antenna, etc., etc.



Many more stories to tell. But.....

