

CFI

VIKING COST PROBLEM

COST PROBLEM - SEP 1971 61.9 M

GCMS 13.0M

MMC 48.9M

SUBCONTRACTS (9) 50%

MMC OVERHEAD 20%

MMC INHOUSE 30% (UNDER ESTIMATE AND
LABOR RATES)

OFFSETS - SEP/DEC 1971 (49.7)

ENGINEERING REDUCTIONS (22.8)

SCIENCE REDUCTIONS (11.3)

APA (15.6)

REMAINING PROBLEM - LATE 1971 12.2

CFI

VIKING COST PROBLEM - CON'T

PROBLEM - LATE 1971	12.2
MMC ADJUSTMENTS	0.2
IMAGERY INCREASE	1.5
BIOLOGY	14.9
ENGR. SUBSYSTEMS	(3.5)
MMC LABOR RATES	(3.7)
MMC OVERHEAD	(7.3)
OTHER	(1.9)
JPL INCREASE	2.6
GCMS INCREASE	1.5
IDENTIFIED PROJECTED REDUCTIONS	(4.0)
ENCAPSULATE BIOLOGY INSTRUMENT	1.0
APA	(2.6)
	10.9

NOV. DECISIONS

SCIENCE COST OFFSETS

REDUCE SCIENCE TEAM SUPPORT	3.0
SIMPLIFY GCMS	3.0
REDUCE MISSION ANALYSIS AND DESIGN EFFORT IN SUPPORT OF SCIENCE	1.0
SIMPLIFY BIOLOGY INSTRUMENT	2.0
MINIMUM METEOROLOGY OPTION	1.6
REDUCE PHYSICAL PROPERTIES BUDGET	.15
FIXED CAMERA MAST	.3
END MISSION AT CONJUNCTION	.5
	<u>11.55</u>
DIRECT INPUT MASS SPECTROMETER (BACKUP)	<u>.25</u>
	11.30

Decisions By Wilson?

VIKING SCIENCE CHANGES (MARCH 1972)

- o RETAIN THE SIMPLIFIED GCMS. SHIFT MANAGEMENT FROM JPL TO LaRC - (\$7.5M)
- o SIMPLIFY BIOLOGY BY THE REMOVAL OF THE LIGHT SCATTERING EXPERIMENT - (\$2.3M)
- o DELETE IMAGE MOTION COMPENSATION AND IMAGE INTENSIFIER FROM ORBITER CAMERA - (\$2.0M)
- o ADD THE X-RAY FLUORESCENCE SPECTROMETER TO THE LANDER PAYLOAD FOR INORGANIC ANALYSIS - \$3.2M
- o DELETE THE HUMIDITY SENSOR FROM THE METEOROLOGY EXPERIMENT - (\$2.3M)

TOTAL REDUCTION - (\$10.9M)

Rec from
Physics
SSB

not done yet
not done yet
not done yet

adv. Comm.
Steering Comm.
own internal
contractors
(The Bay Division OSS
Haley Smith)
what tie to L.S. - none?

GCMS STATUS

- o NIER ON GCMS TEAM - OVERSEE INSTRUMENT DEVELOPMENT
- o MANAGEMENT RESPONSIBILITY SHIFTED TO LANGLEY RESEARCH CENTER FROM JPL
- o CONTRACT CHANGED TO FIXED PRICE
- o SAVING TO VIKING - \$7.5M

Litton - ~~Bentley~~ - ^{Beckman} - Perkins Elmer.

BENDING BACK UP. NOW OUT.

*JPL out of loop
input to WEC.*

Comm. upset by lack of info on GCMS.

Need document giving firm specifications and design characteristics. Test spec will provide it.

Results. Test spec

1. Lederberg & Ruit ^{By} 10/4.
2. ^{which have my problems.} ^{but free problem...}

BIOLOGY STATUS

→ this is my
main idea

- DELETED LIGHT SCATTERING EXPERIMENT
- COST SAVING TO VIKING - \$2.3M
- REDUCED COMPLEXITY, VOLUME AND WEIGHT
- PRACTICALITY OF ENCAPSULATING BIOLOGY EXPERIMENT
IS PROVING QUESTIONABLE

Now saying feed out.
delete
Largely from Ames boulding out.

Biotum decided. Couldn't do these exp. in mt. vol..
Now done get the P.I. to realize imp. of this.
Poor Trypt ; Poor P.I. understanding; will report to the Adv. exp. Wamberg.

Created right impression... 1 1/2 yrs. from now del... no working prototypes.

ORBITER VISUAL IMAGING SYSTEM STATUS

- REMOVED IMAGE INTENSIFIER
- DELETED IMAGE MOTION COMPENSATION -
- INCREASED FRAME TIME BUT RETAINING CONTIGUOUS COVERAGE
- REDUCED NUMBER FOCAL LENGTH (INCREASE SENSITIVITY)
- INCREASED SCAN LINE DENSITY (INCREASED RESOLUTION)
- INCREASED RELIABILITY, SIMPLIFIED DEVELOPMENT
- WEIGHT SAVING 10+ POUNDS (ORBITER)
- COST SAVING \$2.0M

What is essential? Tool 3.

People - may have to delete another.
~~of~~ Cells - if do as the not worth while
highly likely.

INORGANIC CHEMISTRY INVESTIGATION
INSTRUMENT COMPARISON

	<u>ALPHA BACK SCATTER</u>		<u>X-RAY FLUORESCENCE</u>	
	<u>INTERNAL</u>	<u>DEPLOYED</u>	<u>INTERNAL</u>	<u>INTERNAL</u>
WEIGHT (LBS)	10.1	12.1	4.4	
VOLUME INTERNAL (IN ³)	230	35	111	
COST (\$M)	6.56	6.45	3.2	

METEOROLOGY STATUS

- DELETED HUMIDITY SENSOR
- PROVIDING WINDS AND TEMPERATURE TO SATISFY SCIENTIFIC REQUIREMENTS (VELOCITY AND DIRECTION)
- COST SAVING OF \$2.3M PROVING DIFFICULT TO REALIZE

We must have way to get handle on Viking. !
"Management judgement" we need to reduce bio experiment complexity and \$ inv.

Quarantine:

1. Test counting on relaxation heating
2. Studying alternatives to thermal steril.
3. ... other paths to cont. cont.
4. Establish full back position. ??

Copies of tree-graphs.

Russians - did they sterilize?

heat parts -

clean room

hydrogen peroxide beonide..

SSB reviewing Quarantine,

→ Need a Scientific Report on Apollo Quarantine effort + results

Action By NASA ! ! ! !