

Apollo 13






Apollo 13 Launch



The mission started as for Apollo 8, 10, 11 and 12 with a spectacular launch of the mighty Saturn V rocket.

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The Astronauts

CM Pilot	Commander	LM Pilot
		
Jack Swigert	Jim Lovell	Fred Haise

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Reality and Hollywood




The story of the Apollo 13 accident, and the heroic efforts of those in Mission Control to get the three astronauts safely back to Earth, was immortalised by Hollywood in the 1995 film ...

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Apollo 13

The Actors

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Reality and Hollywood

The story of the Apollo 13 accident, and the heroic efforts of those in Mission Control to get the three astronauts safely back to Earth, was immortalised by Hollywood and also by ...

LEGO !

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LEGO Apollo 13



APOLLO 13
LEGO Ideas Project
492 pcs

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LEGO Mission Control

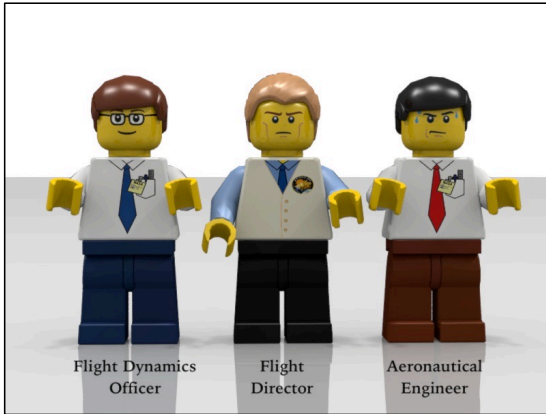


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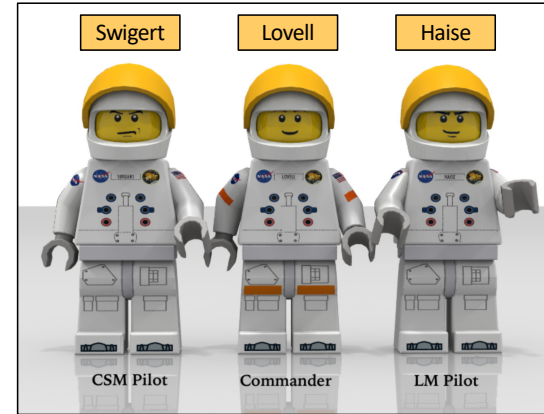
8

Apollo 13

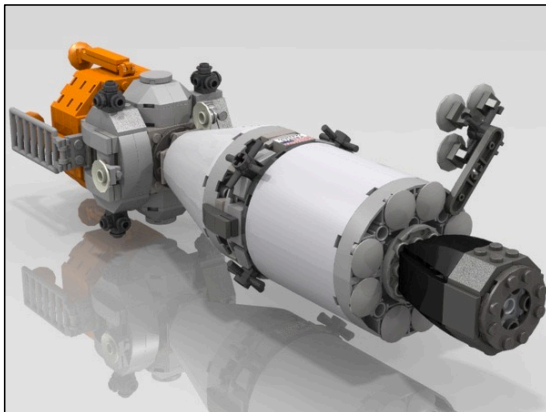
LEGO Mission Controllers



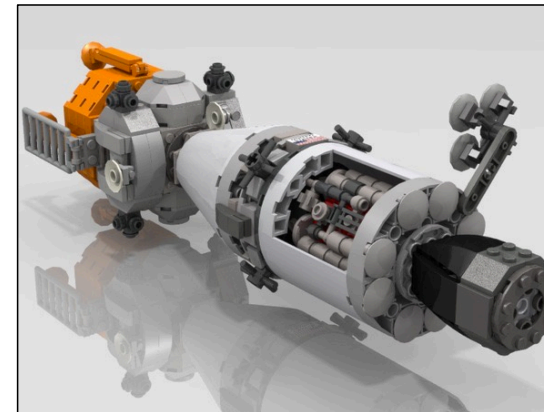
LEGO Astronauts



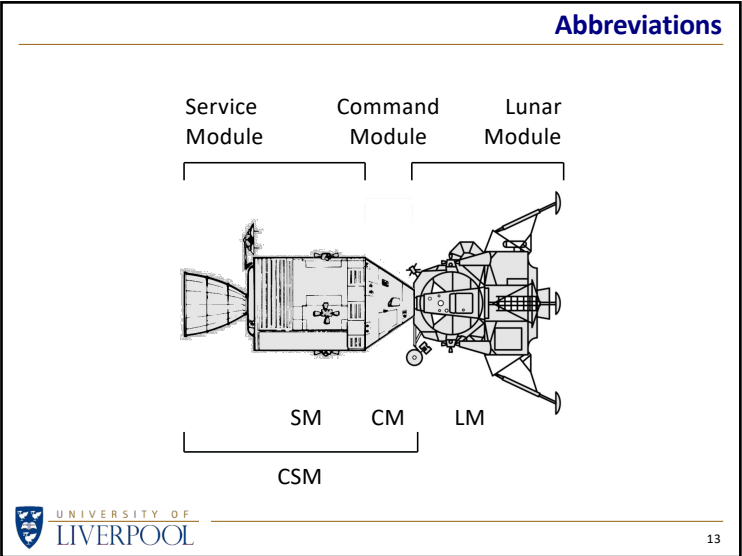
Pre-Explosion



Post-Explosion



Apollo 13



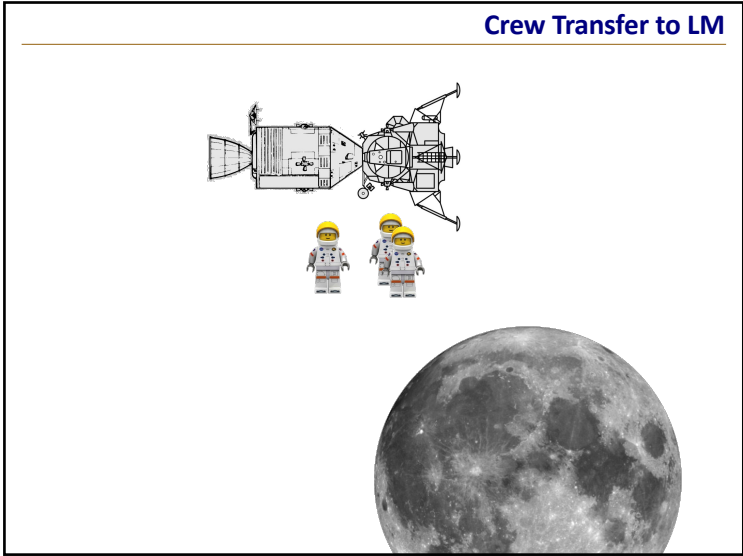
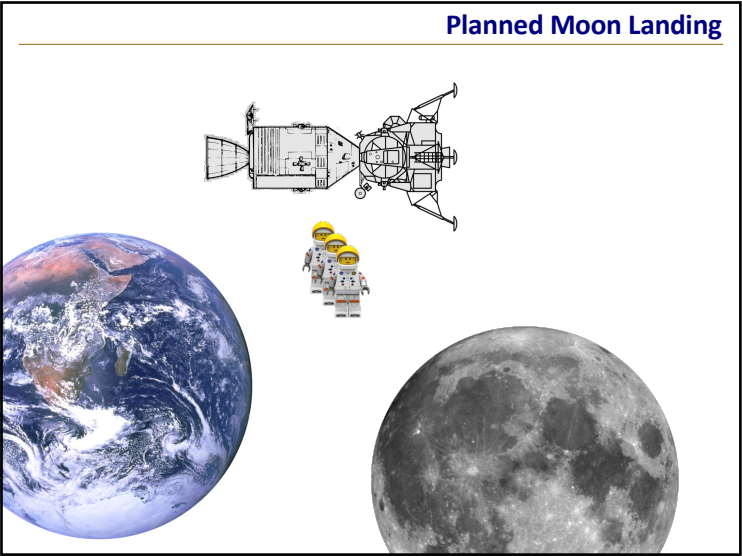
The Mission

The mission ...

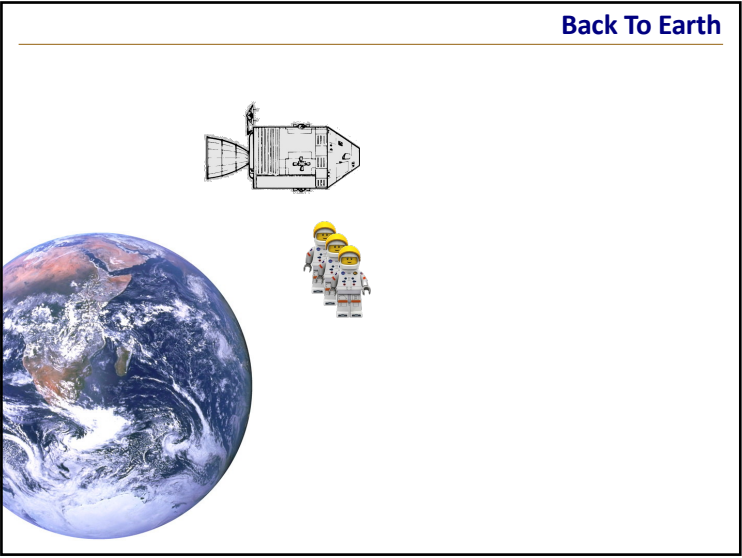
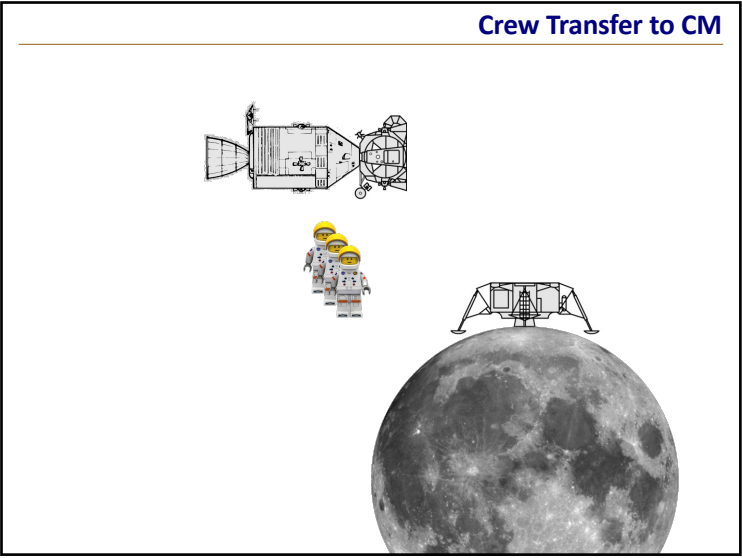
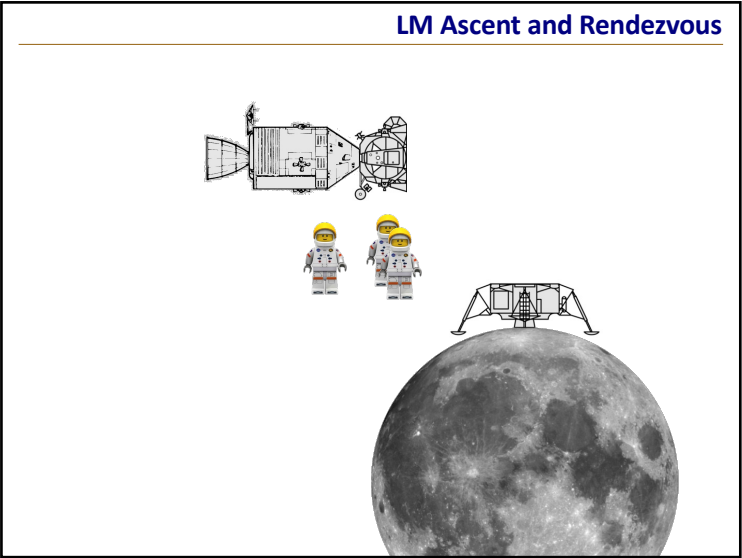
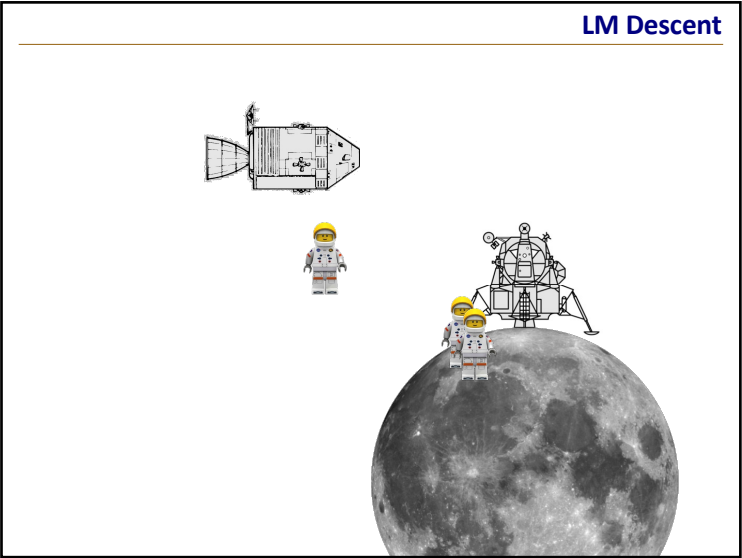
... as it was supposed to happen

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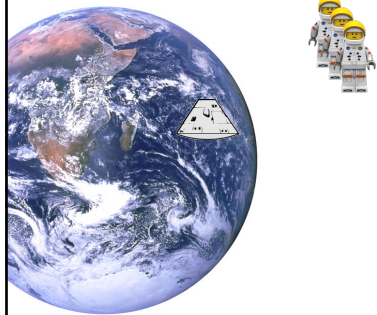


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Apollo 13

Splashdown

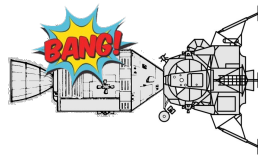


The Mission

The mission ...

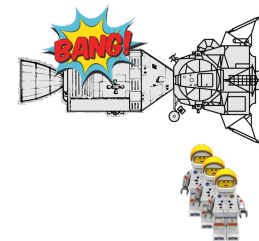
... as it actually happened

Houston, We've Had a Problem



A fan inside one of the oxygen tanks had faulty wiring insulation, so when the tank was stirred a spark caused the oxygen tank to explode, damaging the fuel cells and blowing out a side panel of the SM.

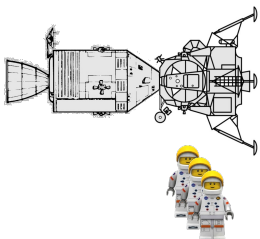
Into the LM Lifeboat



Contingency plans for a three-day flight returning from the Moon with a crippled CSM had been thought about, but Apollo 13 was at least four days from Earth.

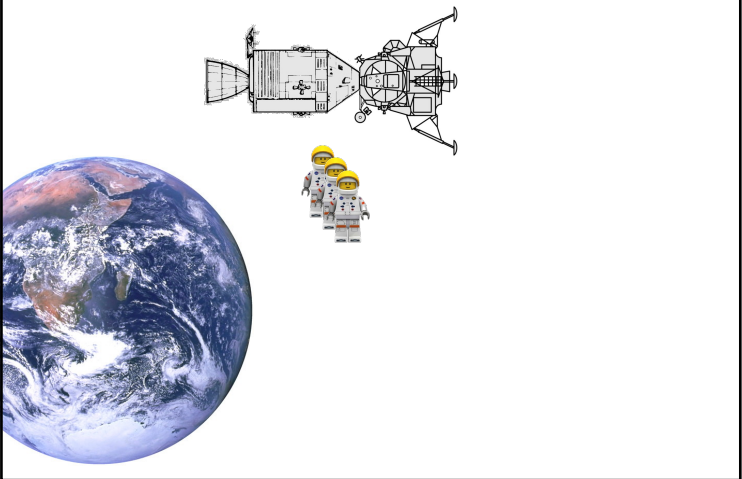
Apollo 13

Survival Mode

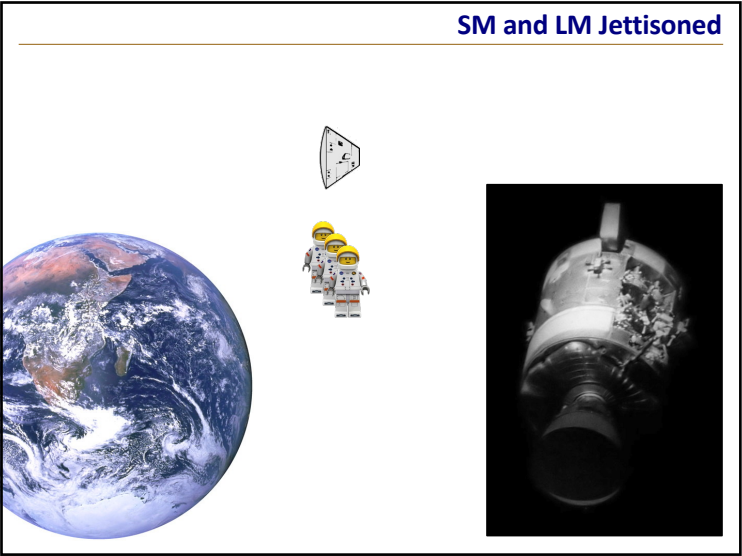


How could they ensure that the remaining oxygen, water and electrical power would last long enough to get them home safely?

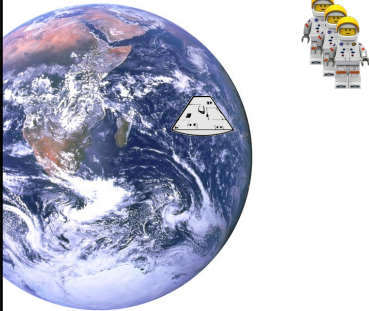
Crew Transfer to CM



SM and LM Jettisoned

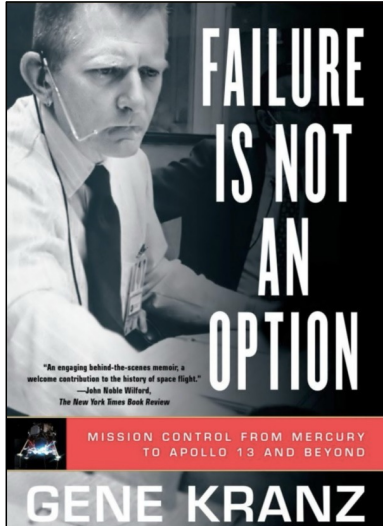


Splashdown



Apollo 13

Gene Kranz



That famous phrase was spoken by actor Ed Harris but not by Kranz himself.

However, Kranz used it for his autobiography because it reflected so succinctly the attitude of those working in Mission Control.

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What Happened To ...?

The Command Module (call sign 'Odyssey') made it safely back to Earth with its three occupants.

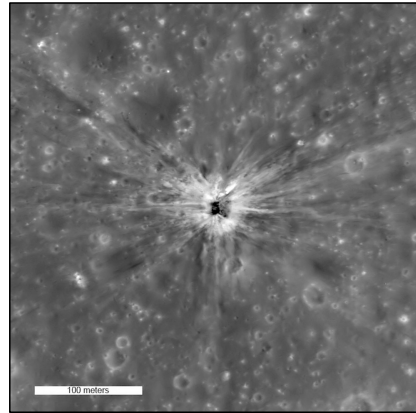
What about the rest of the Apollo hardware?

The third stage of the Saturn V rocket, after it had accelerated the CSM+LM spacecraft towards the Moon, was given one last task to perform ...

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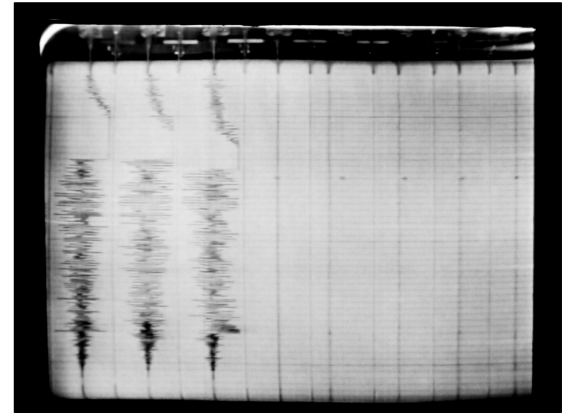
Saturn S-IVB Impact Site



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Apollo 12 Seismometer



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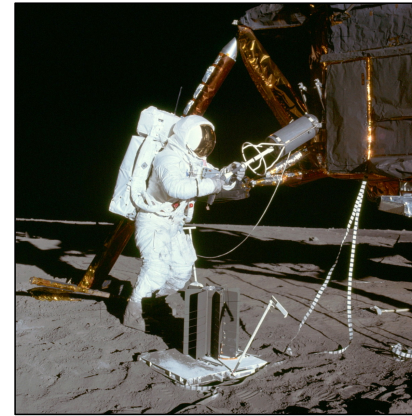
What Happened To Aquarius?

After the Lunar Module (call sign 'Aquarius') was jettisoned it re-entered the Earth's atmosphere and disintegrated.

However, it was important to ensure that its re-entry was controlled to ensure that any surviving components fell into the deepest Pacific trench.

In particular ...

Plutonium Power



Alan Bean (Apollo 12) removes the plutonium fuel cask from the LM to transfer it to the RTG in front of him that powers the experiments on the lunar surface.

RTG = Radioisotope Thermoelectric Generator

Jim Lovell and Tom Hanks



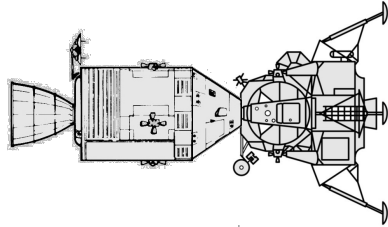
Read All About It!



Apollo 13

Who Made What

Command and Service Modules Lunar Module



North American Rockwell Grumman Aerospace

Grumman Invoice To North American

ITEM NO.	QUANTITY	UNIT	DESCRIPTION	UNIT PRICE	TOTAL PRICE
1	1	HR	Towing, \$4.00 first mile, \$1.00 each additional mile. Portable toilet, fast service. Military charge (code call # 4.05 EOM) customer's jump cables.	\$400.00	\$400.00
2	1	FME	Portable toilet.	4.05	4.05
3	500	#	Oxygen at \$10.00/lb	200.00	200.00
4	1		Sleeping accommodations for 2, no TV, air conditioned, with radio, with view, with view. Additional guest in room at \$8.00/night (1) Check out no later than upon Fri. 1/17/70. Accommodation not available beyond that time.	30.00	30.00
5			Prepaid		30.00
6			Water		No Charge
7			Refrigeration "frig" unit, including all transfers, baggage handling and gratuity		No Charge
			Sub Total		\$630.05
			50% commercial discount + 25 cash discount (net 30 days)		\$119,461.24
			total		\$119,461.24

Grumman Invoice To North American

Grumman Invoice To North American

Apollo 13

Grumman Invoice To North American

GRUMMAN AIRCRAFT ENGINEERING CORPORATION PURCHASE REQUISITION									
North American Book		North American Book		North American Book		North American Book		North American Book	
1	400.00	RT	Room	\$8.00 first night, \$1.00 each additional night					300.00
2	1	RT	Room	Breakfast					4.05
3	200								200.00
4	1			Additional guest in room at \$8/night (1) Check out no later than 11:00 AM. (2) Accommodation not available beyond that time.					8.00
5				Internet					No Charge
6				Telephone "pay as you go" including all transfers, long distance and gratuities					No Charge
7				20% commercial discount + 2% cash discount (not 30 days)					55.188.00
Total									317,491.05

Additional guest in room at \$8/night



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Epilogue – Recovery of Odyssey



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Epilogue – NASA's Finest Hour



Duke, Lovell, Haise, Kranz, Lunney, Griffin, Brand, Lousma, Kerwin (2015)

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www.liverpool.ac.uk/~sdb/Talks

Dr Steve Barrett
RCC 7 Mar 2025