

MOON SHOT

***THE MISSION 6000
YEARS IN THE
MAKING***

an evening with APOLLO 15 CMP
AL WORDEN

presented by



www.loughgur.com

We Do Printing*

WELCOME

We want to extend a warm welcome and thank you for your support by attending this unique fund raising event for the Lough Gur Development Group.

And to Al Worden, thank you for sharing your story with us, and our sincere thanks for agreeing back in 2015 to join our distinguished group of patrons.

We can only start to imagine what our ancestors thought as they gazed at the skies, pondering the movements of the stars, sun and moon.

Is the Great Stone Circle at Grange their way of timing the seasons?
A guide to the heavens?
Or perhaps a map to some destination none of us are aware of today?

It is these and other questions which peak the curiosity of young visitors at Lough Gur, where we further develop on the subjects of Science, Technology, Engineering, Art and Mathematics.

By being here you are playing your part in supporting this ongoing story of human development at one of Ireland's national treasures.

My sincere thanks,

Kate Harold

Manager Lough Gur Development





13:00 - 14:30

Astronaut Lunch

18:30 - 19:30

Astronaut Photoshoot & Exhibit

19:45 - 21:30

The Mystery of Lough Gur

Falling to Earth - Al Worden

Fireside Chat with Al Worden &
Friends

Raffle & Prizes

21:45

Autograph Session



SCIENCE @ Lough Gur

Lough Gur Development

A non profit community organisation founded in 1969 and officially inaugurated in 1993 to promote, preserve and protect the history, archaeology, folklore and environment of the surrounding area.

Lough Gur is an accredited site for Primary School Science & Maths, by the Science Foundation of Ireland (SFI). Throughout the year courses are provided to both students and teaching staff through our partner network.

Visitors can enjoy the rural unspoiled beauty that is easily accessible 21km's from Limerick City. In 2016 Lough Gur also officially became part of Ireland's Ancient East.

Lough Gur Science Group

Formed in 2014 the Lough Gur Science Group is a voluntary group, reporting to the management of Lough Gur Development; with a charter and passion to develop and deliver a program of knowledge and education across the disciplines of Science, Technology, Engineering, Art and Mathematics (STEAM).

In addition Lough Gur Science Group builds partnerships with external organisations who play a role in the delivery of science programs at the heritage center.

The Group aims to deliver science to all visitors to Lough Gur, both young and old.



The Heritage Centre provides a fascinating interpretation of the sites associated with Lough Gur. The facility was completely refurbished and upgraded in 2013.

Highlights include:

A modern exhibition detailing over 6,000 years of history at Lough Gur, listening points, audio guides, archaeological dig, Neolithic Pot model, AV presentation and interactive touchscreens. There is also a retail area and coffee dock.



Summer opening times

Monday to Friday : 10am to 5pm

Saturday & Sunday: 12pm to 6pm

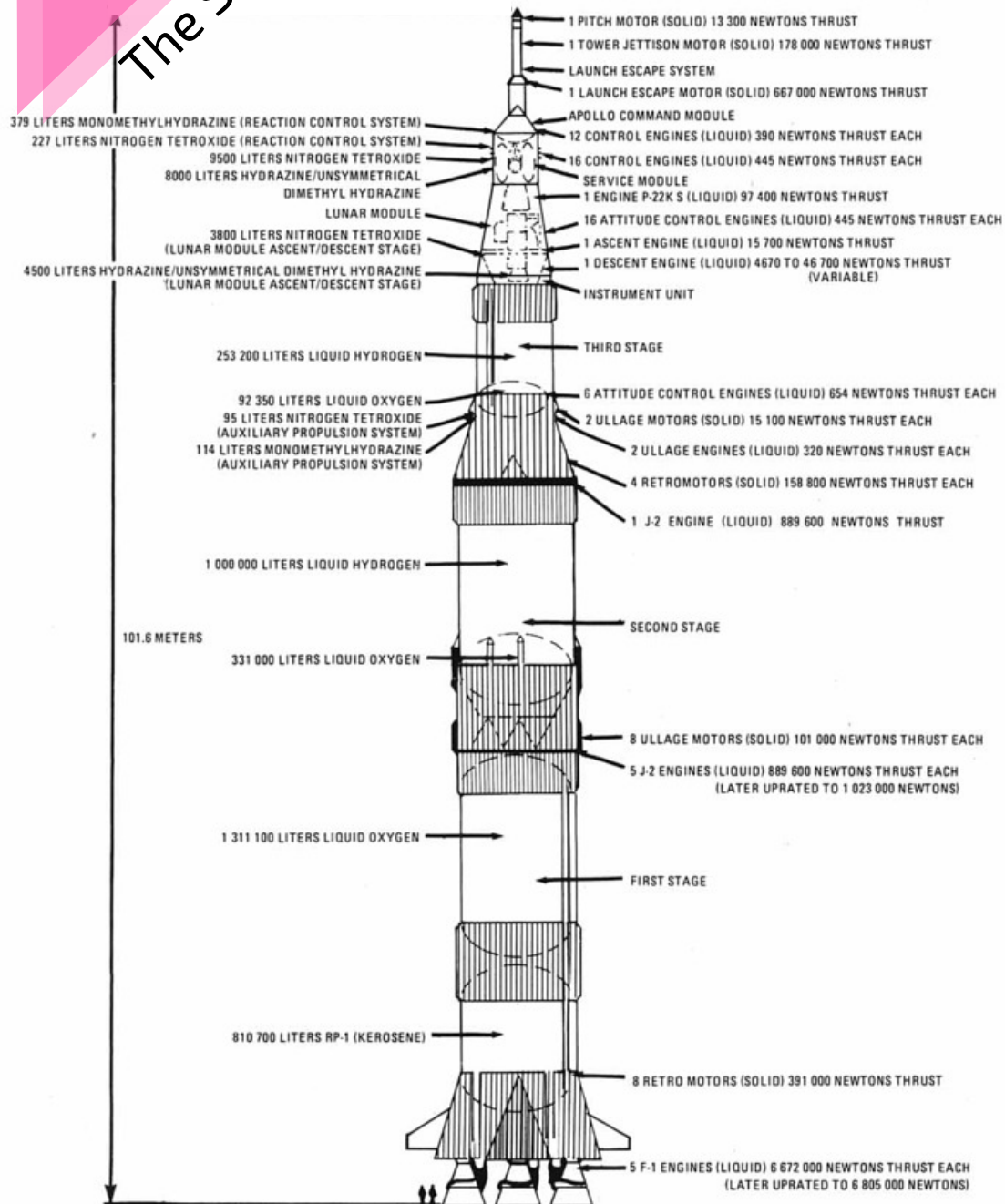
Winter Opening times

Monday to Friday: 12pm to 4pm

Saturnd & Sunday: 12pm to 4pm.



The Saturn V



DID YOU KNOW ...

THE APOLLO COMMAND MODULE IN WHICH THE THREE US ASTRONAUTS WOULD RIDE TO AND FROM THE MOON, OFFERED 73 CUBIC FEET OF SPACE PER MAN, AGAINST THE 68 CUBIC FEET PER PERSON AVAILABLE IN A COMPACT CAR AT THE TIME.

THE TANKS WHICH HELD THE SUPER-COLD FUEL IN THE APOLLO SERVICE MODULE WERE SO WELL INSULATED THAT ICE CUBES PLACED INSIDE THE TANKS WOULD TAKE EIGHT AND A HALF YEARS TO MELT.

THE FIVE 224,000 POUND TRUST J-2 ENGINES, THAT POWERED THE SECOND STAGE OF THE SATURN V, GENERATED THRUST EQUAL TO ABOUT 95.4 BILLION WATTS, OR THE POWER OF 72 HOOVER DAMS.

IT WOULD TAKE 96 RAILWAY FUEL-TANK CARRIAGES TO HOLD ENOUGH ROCKET PROPELLANT TO FILL THE SATURN V.

AT ITS PEAK, MORE THAN 20,000 INDUSTRIAL FIRMS EMPLOYING MORE THAN 350,000 PEOPLE WERE PRODUCING EQUIPMENT FOR THE US APOLLO / SATURN SPACE PROGRAM, UNDER CONTRACTS WITH NASA.

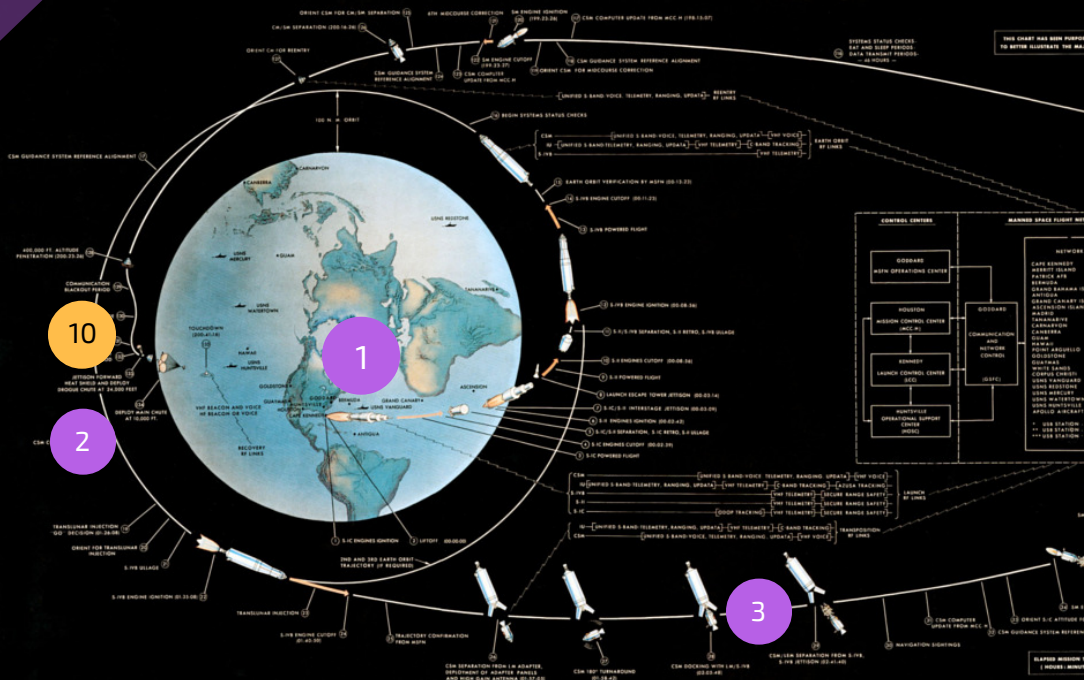
THE SATURN V LAUNCH VEHICLE WAS POWERFUL ENOUGH TO SEND, ON THE WAY TO THE MOON, ALL MANNED SPACE CRAFT PREVIOUSLY LAUNCHED IN THE MERCURY AND GEMINI PROGRAMS.

THE 12-FOOT TALL APOLLO COMMAND MODULE CONTAINED ALMOST 15 MILES OF WIRE, ENOUGH TO WIRE 50 TWO-BEDROOM HOMES IN THE 1960S.

THE FUEL PUMPS OF THE F1 ENGINES WHICH WOULD POWER THE FIRST STAGE OF THE SATURN V LAUNCH VEHICLE, PUSHED FUEL WITH THE FORCE OF 30 DIESEL TRAIN ENGINES.

Mission Profile

Splash Down
August 7 16:45:53



Launch:
July 26 09:34:00 (EST)

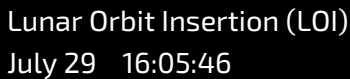
Translunar Injection (TLI)
July 26 12:30:03

CSM-LM docking
July 26 13:07:49 pm

Lunar Liftoff
August 3 13:11:22

LM-CSM Docking
August 3 13:11:22

Transearth Injection (TEI)
August 4 17:22:45



CSM-LM Separation
July 30 14:13:30

Lunar Landing
July 30 18:16:29

Al Worden

NASA BIOGRAPHY



Al Worden at the Great Stone Circle near Lough Gur / Photograph: Keith Wiseman

Personal Data:

The son of Merrill and Helen Worden, he was born in Jackson, Michigan, on February 7, 1932. Attended Dibble, Griswold, Bloomfield and East Jackson grade schools and completed his secondary education at Jackson High School: Received a bachelor of military science degree from the United States Military Academy at West Point, New York, in 1955 and master of science degrees in Astronautical/Aeronautical Engineering and Instrumentation Engineering from the University of Michigan in 1963.

Experience:

Worden was graduated from the United States Military Academy in June 1955 and, after being commissioned in the Air Force, received flight training at Moore Air Base, Texas; Laredo Air Force Base, Texas; and Tyndall Air Force Base, Florida. Prior to his arrival for duty at the Johnson Space Center, he served as an instructor at the Aerospace Research Pilots School-- from which he graduated in September 1965. He is also a February 1965 graduate of the Empire Test Pilots School in Farnborough, England. He attended Randolph Air Force Base Instrument Pilots Instructor School in 1963 and served as a pilot and armament officer from March 1957 to May 1961 with the 95th Fighter Interceptor Squadron at Andrews Air Force Base, Maryland. He has logged more than 4,000 hours flying time--which includes 2,500 hours in jets.

NASA Experience:

Worden was one of the 19 astronauts selected by NASA in April 1966. He served as a member of the astronaut support crew for the Apollo 9 flight and as backup command module pilot for the Apollo 12 flight.

Worden served as command module pilot for Apollo 15, July 26 - August 7, 1971. His companions on the flight were David R. Scott, spacecraft commander, and James B. Irwin, lunar module commander. Apollo 15 was the fourth manned lunar landing mission and the first to visit and explore the moon's

Hadley Rille and Apennine Mountains which are located on the southeast edge of the Mare Imbrium (Sea of Rains).



Worden logged 38 minutes in extravehicular activity* outside the command module, "Endeavour." In completing his three excursions to "Endeavour's" scientific instrument module bay, Worden retrieved film cassettes from the panoramic and mapping cameras and reported his personal observations of the general condition of equipment housed there. Apollo 15 concluded with a Pacific splashdown and subsequent recovery by the USS OKINAWA. In completing his space flight, Worden logged 295 hours and 11 minutes in space.

During 1972-1973, Worden was Senior Aerospace Scientist at the NASA Ames Research Center, and from 1973 to 1975, he was chief of the Systems Study Division at Ames.

* Worden's EVA would be the first deep space EVA made by man, and to date stands as the record for the furthest EVA executed from Earth. Not the only world record to be held by Al Worden.

Paul Ryan

Paul Ryan is a graduate of Computer Science from the University of Limerick and is an IT Operations manager with one of the worlds largest insurance companies. A native of Limerick who is passionate about human space exploration & development, Paul was responsible for bringing AI Worden to Limerick in 2014 and now volunteers as a project manager on the Lough Gur Science and Education group where he is currently leading the Lough Gur Dark Sky initiative.

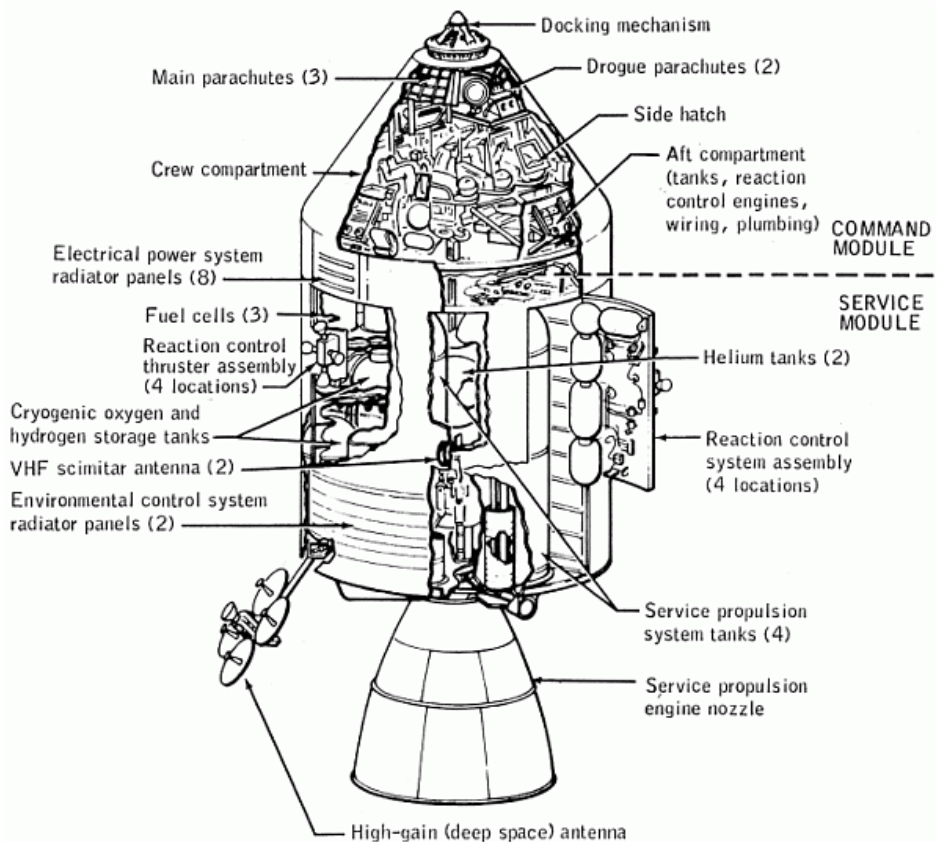
Dr. Niall Smith

Niall Smith received his PhD (Astrophysics) from UCD in 1990 and appointed as a lecturer in Physics at Cork Institute of Technology (CIT). Dr Smith is also Principal Scientist at Blackrock Castle Observatory (BCO – www.bco.ie). The Observatory was opened in 2007 and presently houses a robotic observatory alongside Ireland's first interactive science center based on the theme of Life in the Universe.

Dr. Frank Prendergast

Frank Prendergast holds a PhD from the School of Archaeology UCD and is currently an Emeritus Research Fellow at Dublin Institute of Technology. Frank has been involved with Lough Gur since 2014 when he undertook an archaeoastronomy study of the Great Stone Circle, which he presented at both Lough Gur (2014) and the Limerick Hunt Museum (2015). Frank continues to provide his guidance and expertise to the Lough Gur Science & Education Group.

Look inside the CSM





"Honey Fitz" waves to fans at Fenway Park, home to the Boston Redsocks Baseball Team.

Lough Gur would play a pivotal role in human space exploration, where over 6000 years ago man would ponder the skies and build the monument which stands to this day, the Great Stone Circle at Grange.

Those camp-fire conversations would evolve over thousands of years into a sophisticated interplanetary navigation system , as used by Al Worden in navigating Apollo 15 to the moon.



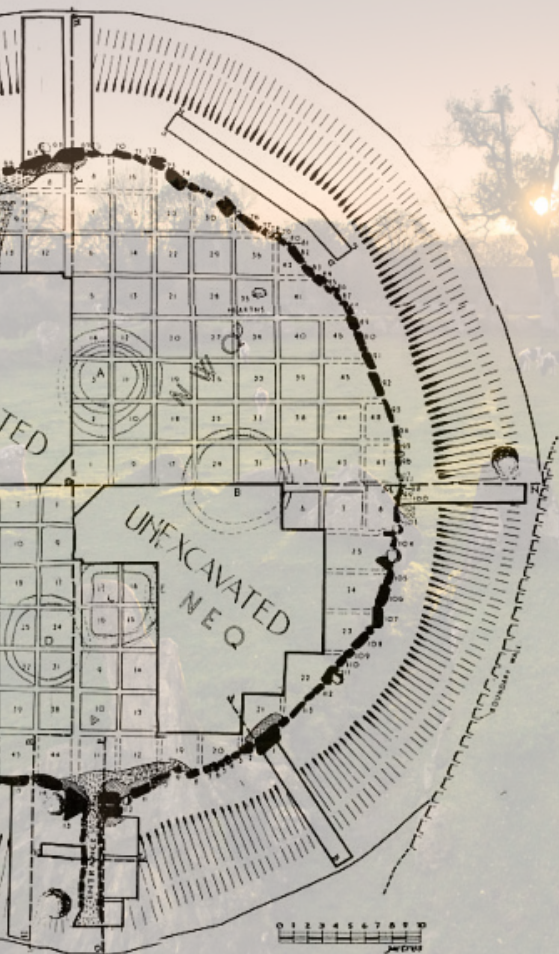
*We choose to go to
the moon*

The story continues in 1832 with the birth of Lough Gur native, Michael Hannon, who was the great-grandfather of US President John F. Kennedy. His daughter Mary Josephine Hannon, would marry her 2nd cousin John Francis Fitzgerald (1863 – 1950) who would become Mayor of Boston and grandfather to President John F. Kennedy. John was also known as "Honey Fitz" because of his beautiful singing voice.

Answering Kennedy's challenge of the 1960s, Al Worden would indeed go to the moon, and in 2014 return to Lough Gur, thus closing the time loop on the Kennedy heritage and 6000 years of astronomical history.



Grange Stone Circle



The stone circle at Grange, the largest in Ireland, comprises a ring of continuous uprights up to 2.8m high, with a diameter of 45m and backed by an earthen bank 9m wide and about 1.2m tall. The entrance on the eastern side is paved and flanked by uprights.

The largest stone is Rannach Chruim Duibh (Crom Dubh's Division) and is over 13 feet high and weighs 40 tons. The entrance stones are matched by a pair of equally impressive slabs on the southwest side, whose tops slope down towards each other to form a v-shape.

Today, the original purpose of the circle remains a 6000 year old mystery.

