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TWO YEARS ON, WHAT HAS HOPE PROBE ACHIEVED?



Two years on: Hope Probe has shared 688.5GB of data

MARS MISSION SHOWS BOUNDLESS POTENTIAL FOR SPACE EXPLORATION

SPACE EXPLORATION

DUBAI
 BY ANGEL TESORERO
 Senior Reporter

Yesterday marked 730 days of Hope Probe, the first interplanetary mission undertaken by an Arab nation, which was successfully launched aboard an H2A202 rocket from Japan's Tanegashima Space Centre. It travelled more than 490 million kilometres from Earth for seven months before arriving successfully in Mars orbit on February 9, 2021.

Two years hence – from the launch of Hope Probe on July 20, 2020 at 1.58am (UAE time) – the country has shown its boundless potential for space exploration. The Emirates Mars Mission (EMM) recently released the fourth batch of scientific data collected by the Hope Probe's instruments during orbit around Mars. The UAE is not only demonstrating the capabilities of Hope Probe's instruments but is also freely sharing fresh insights into the Red Planet's discrete aurora and galactic cosmic ray.

Developed by Emirati engineers and researchers, in collaboration with three US universities (University of Colorado Boulder, University of Arizona and University of California, Berkeley), Hope Probe is orbiting the Red Planet for one Martian year (two Earth years) to provide a complete picture of the Martian atmosphere and its layers. So far, 688.5 gigabytes of fresh data have been shared with the international scientific community that will help answer key questions about the global Martian atmosphere and the loss of hydrogen and oxygen gases into space.

Global collaboration

Beyond the scientific objectives of Hope Probe are the UAE's strategic objectives revolving around advancement of human knowledge, anchored on global collaboration.

The mantra of 'working with others' has helped the UAE learn valuable lessons to take on more ambitious projects for the benefit of humanity. Next year, Dubai will host the International Conference on Space Operations (SpaceOps 2023). Later this year, the country will be sending the world's smallest lunar rover to the Moon. Named after the late Shaikh Rashid Bin Saeed Al Maktoum, the founding father of modern Dubai, Rashid Rover is actually two years ahead of its original launch schedule.

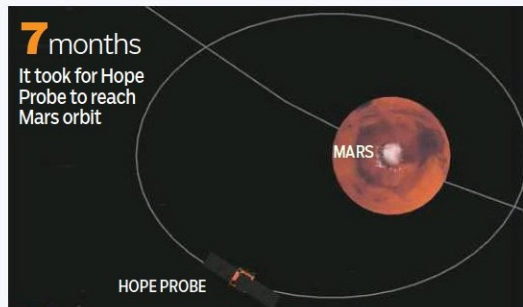
Earlier this month, on July 3, Emirati analogue astronaut Saleh Al Ameri successfully completed his eight-month mission as part of the Scientific International Research in the Unique Terrestrial Station (SIRIUS-21) crew that trained for long-term space travel.

UAE pioneering astronauts Hazza Al Mansouri and Sultan Al Neyadi have also successfully completed an intensive two-year Nasa astronaut training programme, and one of them will take part in a six-month stay aboard the ISS, three years after the UAE sent the first Emirati astronaut to space.

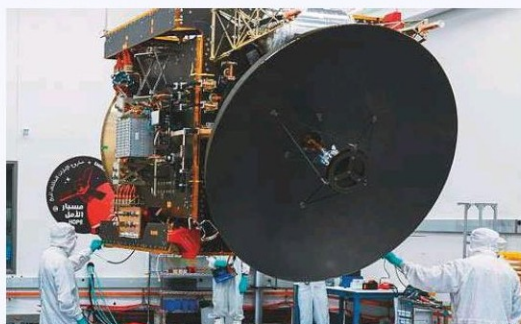
Emirati companies are also



■ Hope Probe's historic take-off from Japan's Tanegashima Space Centre on July 20, 2020.



■ Hope Probe's position yesterday, according to the Emirates Mars Mission website's live tracking feature.



■ Hope Probe's undergoing testing ahead of the launch.

490m km
 travelled by Hope Probe before reaching Mars orbit

working on MBZ-SAT, which will be launched by the end of 2023 as the second operational UAE satellite. The country developing its own satellites is a big leap from 17 years ago when it sent its first specialist team to South Korea to serve as the core in the establishment of its own space programme, including the development of Mars 2117 vision aimed at building a human colony on Mars.

No bounds

As humanity's passion to explore the depths of space has no bounds, the UAE is also keen not only in understanding the universe deeply but also in finding solutions to Earth's problems.

Prior to the launch of Hope Probe, EMM said understanding the atmosphere of other planets will allow us to better understand our own planet Earth. We will know what hap-

pened to Mars' ancient wet environment, which has now become dry. We can also observe Mars weather phenomena, including its massive dust storms, and compare these with dust storms here on Earth. "The Red Planet has captured human imagination for centuries. Now, we are at a junction where we know a great deal about the planet, and we have the vision and technology to explore further. Mars is an obvious target for exploration for many reasons. From our pursuit to find extra-terrestrial life to someday expand human civilisation to other planets, Mars serves as a long-term and collaborative project for the entire human race."

Continuing mission

Meanwhile, talking about the fourth batch of scientific data collected by the Hope Probe, EMM project director Eng. Omran Sharaf said earlier this month: "The new observations are a testament to the quality of the Hope Probe in driving key research and insights on Mars and its atmosphere... As Hope Probe continues its planned mission to orbit around Mars, we will continue to identify ways in which we can enrich our discoveries and

HOPE PROBE FACTS

July 20, 2020 – Hope Probe was launched from Japan's Tanegashima Space Centre 1.58am (UAE time) – launch time

493.5 million kilometres – distance travelled by Hope Probe from Earth to Mars orbit

9 February 2021 – Hope Probe reached Mars orbit
1 Martian year (two Earth years) – mission duration of Hope Probe to observe Mars atmosphere

Mission objectives

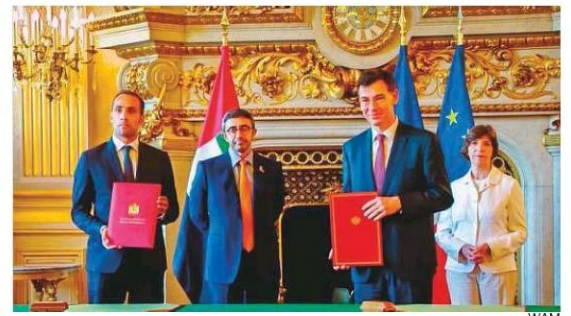
Hope Probe is studying the current state of Mars' atmosphere and weather and the reason for the escape of hydrogen and oxygen from its upper atmosphere. It is also studying the relation between the higher and lower atmospheres of Mars and various other phenomena like dust storms, weather variations, and atmosphere dynamics.

Where is Hope Probe now?

Hope Probe is orbiting Mars between 20,000 and 43,000km with a 25-degree incline towards Mars. It can complete one orbit around the planet every 55 hours, capturing comprehensive data every nine (Earth) days.

observations to deliver above and beyond our mission, to further enhance the international community's knowledge and understanding of the Red Planet, and to bolster the UAE's position in the global space domain."

EMM science lead Hessa Al Matroushi added: "The recent coverage from the Mars Hope Probe is a tremendous feat and is evidence of the boundless potential that our instruments have in achieving science beyond what it was designed for. The latest insights on Mars and its atmosphere reaffirm that there is much to discover, and we are looking forward to seeing the mission's objectives of providing useful scientific data, enhancing national capabilities, and fostering global collaboration come to fruition with every new data collected."



■ The agreements were signed by Salem Humaid Al Marri and Philippe Baptiste, in the presence of Shaikh Abdullah Bin Zayed Al Nahyan and Catherine Colonna.

UAE, France sign space collaboration deals

Pacts cover lunar exploration, human space missions

DUBAI
 Gulf News Report

Three agreements were signed on Tuesday between the UAE's Mohammad Bin Rashid Space Centre (MBRSC) and France's National Centre for Space Studies (CNES) during the state visit of UAE President His Highness Shaikh Mohammad Bin Zayed Al Nahyan to France.

One of the three agreements was a memorandum of understanding (MoU), seeking to strengthen cooperation between UAE and France in the field of lunar exploration. There were also two letters of intents, seeking to establish a joint working group to oversee new Earth observation missions, and another one outlining prospects for future collaboration on manned space missions and conducting new experiments aboard the International Space Station (ISS).

The agreements were signed by Salem Humaid Al Marri, the MBRSC director-general, and Philippe Baptiste, the CEO of CNES. The signing was held in the presence of Shaikh Abdullah Bin Zayed Al Nahyan, UAE Minister of Foreign Affairs and International Cooperation, and Catherine Colonna, the French Minister for Europe and Foreign Affairs.

Strategic importance

Al Marri said: "The strategic importance of the agreements lies in the fact that they include a wide range of space mission aspects, which will enable us to achieve various goals. Cooperation in the field of lunar exploration and human space missions opens up new opportunities and provides valuable data that contribute to the ultimate goal of humans being able to prosper outside the planet Earth in the future."

He added: "As for cooperation on Earth observation ini-

MBRSC JOINS GLOBAL SPACE CONSORTIUM

The Mohammad Bin Rashid Space Centre (MBRSC) has joined the Space Climate Observatory (SCO) International, a global consortium of space agencies and organisations led by The National Centre for Space Studies (CNES) of France that seeks to coordinate worldwide efforts to accurately monitor the impact of climate change.

In joining the SCO International, MBRSC has committed to sharing with the international space community information from the DMSat-1 satellite, Dubai Municipality's first atmospheric monitoring satellite launched in 2021.

—Gulf News Report

tiatives, the aim is to achieve common global goals to combat climate change and preserve the environment," he added.

Al Marri noted the recent agreements "come as an extension of the cooperation that brings the UAE together with France in the field of space exploration".

Rashid Rover

In a statement, MBRSC said: "It is worth noting that the MBRSC and CNES each have their own programmes for Earth observation, and they have previously worked on developing satellites for various purposes and they also pay special attention to monitoring the environment and climate change. The two centres are currently cooperating on the development of the Rashid Rover, which will be the first Arab mission to the surface of the Moon, landing in an unexplored area and providing valuable scientific data to the global scientific community."

LUNAR MISSION

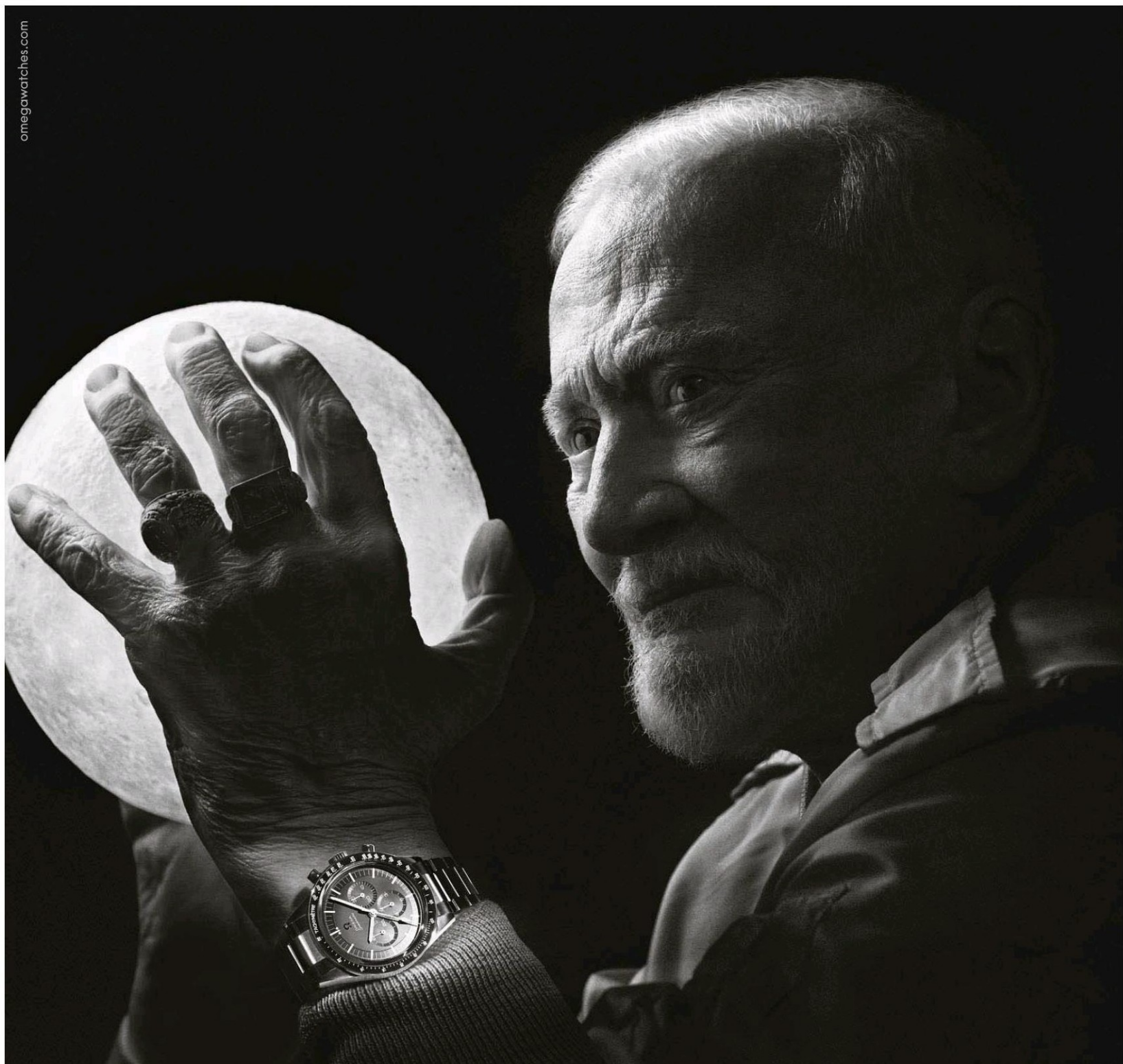
Rashid rover can reach Moon as early as November

DUBAI
 BY ANGEL TESORERO
 Senior Reporter

The UAE's mission to reach the moon this year is on track, with the announcement yesterday by Japanese lunar exploration company ispace that its lander, Hakuto-R, which will carry the UAE-made Rashid Rover to the lunar surface, has completed its flight model and is ready to be deployed as early as November.

The Emirati lunar rover will be delivered to the lunar surface by Japanese lander Hakuto-R, aboard a SpaceX Falcon 9 rocket that will lift off from Cape Canaveral in Florida, US, during the launch window between October to December this year.

In a statement sent to *Gulf News* yesterday, Mohammad Bin Rashid Space Centre (MBRSC) said: "We have no announcement yet, but we are looking forward to the launch of Rashid Rover by Q4 [fourth quarter] this year."



A TIME TO REMEMBER

On July 21st, 1969, Buzz Aldrin stepped onto the lunar surface, completing one of humankind's greatest hours. A lifelong ambition was now beneath his feet, paving the way for a new era of exploration. Around his wrist, the astronaut wore an OMEGA Speedmaster Professional, which in that moment, became the first watch worn on the moon. For this 53rd anniversary, we pay tribute not only to Buzz, but to all those who saw possibility in the night sky.



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