

## **20th July 1969 Neil Armstrong American astronaut becomes the first man to walk on the Moon**

The 40th anniversary of man landing on the moon.

NAS' founding member Dr Colin Keay was lucky enough to have had a first hand view of the Apollo 11 launch at Cape Canaveral.

### **APOLLO 11 FROM THE FRONT ROW**

Associate Professor Colin S. L. Keay

"Nobody at Cape Kennedy, Florida on the morning of July 16th, 1969, is likely to forget the magnificent flight of the huge Saturn 5 rocket blasting the Apollo 11 expedition into space on its epochal voyage to the Moon."

Seldom has such an historic event been witnessed by so many spectators, not to mention several hundred million television viewers. Nearly one million people gathered at the Cape to see at first hand the dawn of a new age of exploration. The vast majority of the spectators were American who contrived their summer vacation itinerary to bring them to the east coast of Florida in time for the launching. Almost fifty thousand of those watching were connected in some way with the activities of the National Aeronautics and Space Administration and there were ten thousand V.I.P. guests present. The most favoured watchers were the 3,500 representatives of the news media of the world. They had the closest view because the press-site is barely three miles from the launch pad. I was fortunate to be one of the dozen or so Australians among this privileged group and no word can adequately convey the impact of the occasion. On the day prior to the launching Brevard County, Florida, was fit to burst. Motels and hotels were fuller than full, the caravan park were overflowing onto the street and for a hundred miles around there was nowhere to sleep except in a car or on the beach. Apollo 11 was the sole topic of conversation as anxious eyes surveyed the occasional wisp of drizzly rain and people wondered if the good weather forecast for the morrow would allow the launching to proceed. The drizzle was very light and scarcely troubled the campers pitching their tents and awnings along the edges of all the causeways and clear road side as much as fifteen miles from the Apollo launch-pad.

The Pre Centre at Canaveral City, just south of the Cape Kennedy restricted area, was like a mad-house on the event of the launch-day. Reporter, cameramen, commentators and correspondents lined up in deep to register and be issued with the all-important press-badge which was essential for entry to the Press-site at Launch Complex 39.

It was also essential for unchallenged access at the front entrance of the Pre Centre where a very burly bouncer efficiently took care of all unbadged gate-crashers. Outside the Press Centre a couple of youthful entrepreneurs all caught everyone, coming and going, for the purchase of an Apollo 11 bumper sticker at a dollar a time-proceeds going to some obscure student organisation.

The bedlam at the Press Centre continued by night as well as day. Hundreds of foreign journalists created a babel of tongues and it was every man for himself. After all, they were there to get news and get it they did with the harassed staff being kept busy handing out red hot news release, answering rapid-fire questions and making transportation arrangements to and from the launch area fifteen miles to the north. Most of the staff of the Press Centre carried out their duties with an efficiency and aplomb born of previous experience, but this was their greatest test yet and many of the key personnel, particularly those in the transportation section, had not slept for days.

At midnight the buses began a shuttle service taking new men to the Press site near the huge Vertical Assembly Building, some three miles west from the Apollo II launch pad. The seventeen-mile journey led through the Cape Kennedy Air Force Station. Originally known to the world as Cape Canaveral the scene of hundreds of rocket firings, then across a two-mile causeway leading to the John F. Kennedy Space Centre on Merritt Island. Seen from the causeway the northern horizon was aglow with light from the searchlight focussed on the Saturn rocket and the thousands of floodlights around the Vertical Assembly Building. The bus travelled west through the industrial launch-support area where the astronauts lay asleep in the Manned Spacecraft Operation Building and turned north on the last four miles to the Vertical Assembly Building and the nearby Press Site, already a hive of activity.

At this stage, eight hours before lift-off, the astronaut back-up crew had finished their pre-launch checks and with scores of other technicians were clearing the pad area as the tanks of the three stage of the Saturn 5 were chilled with liquid nitrogen prior to loading the liquid oxygen and hydrogen, referred to as cryogenic propellants because of their extremely low temperature.

A steady stream of vehicles returned along the three-mile causeway from Pad 39-A as this operation commenced and the three stage of the giant rocket began to glisten with frost as their temperature was lowered. Already 700 tons of kerosene was aboard from fuelling operations carried

out the previous day and in the course of the next four hours almost 2000 tons of cryogenic propellant was pumped in at the rate of 10,000 gallons a minute from storage tanks around the perimeter of the pad area. During this hazardous operation nobody was allowed within half a mile of the rocket.

Back at the Press site the view of the Saturn 5 was unforgettably impressive as it stood illuminated by the best part of a hundred searchlights. The new men in the Press stand found their vocabularies stretched to the limit to do justice to the sight. Into the dozens of telephones in the stand they were breathing words like "translucent" and "iridescent" in an attempt to convey to their new editors thousands of miles away some idea of the beauty of the rocket. One said "It gleamed like white porcelain" and another admitted that it was "just the greatest." I had to agree because to me there was no doubt that the giant white rocket, viewed against the velvet black of the night sky, was the most beautiful man-made object I had ever seen.

In the long hours before dawn the Press site steadily became more crowded and the tension grew. Everything was proceeding so unbelievably smoothly-even the weather forecast was good. I badly needed sleep. The night before on the transcontinental flight I had scarcely dozed but at the Press site the air of expectancy made sleep impossible. Beside, there was no place comfortable enough.

So I listened to the countdown commentary from the loudspeakers everywhere, took a few telephoto time exposures of the rocket and watched the professional newsmen at work.

Shortly before dawn flashes of lightning could be seen in the eastern sky from a thunder storm far out to sea. Apprehension was dispelled when the grey light of dawn revealed an almost clear sky over Cape Kennedy, except for a very thin, very high cloud layer and a few wisp of cloud at lower altitudes. No wind. Almost perfect launch conditions.

A little after 6 am, the loud speakers announced that the astronauts had boarded the crew transfer van and were on their way. This was followed by the news that liquid hydrogen was leaking from a faulty valve in the launch tower, but no hold was necessary-yet. A wail of sirens heralded the arrival of the astronaut. They could have been lost amid the thousands of vehicles everywhere had it not been for the flashing red light on the transfer van and the blue rotating beacons on the escorting patrol cars. They paused near the Vertical Assembly Building for last shots by photographers and TV cameramen and headed through the barriers erected at the end of the causeway leading to Pad 39A.

There they left their escort behind and sped to the pad at 40 miles an hour. As they rode the elevator 300 feet up the launch tower they passed the technicians who were busy switching the liquid hydrogen fuelling operation to a duplicate set of feed pipes thoughtfully provided for just such an emergency. At this point in the countdown the fuelling should have been finished except for topping off but fortunately it had nearly been completed when the leak occurred and the topping off operation, with the astronauts aboard the capsule, was stepped up a little to avoid a hold in the

count-down. As the Sun rose above the thunderclouds out to sea where an occasional flicker of lightning could still be seen, the activity at the Pre Site began to resemble the confusion in the tally room at a General Election. Leaving aside the TV cameras and monitor screens the amount of photographic equipment scattered around the area was quite fantastic. Every conceivable camera-telescope combination was there being fussed over in readiness for the lift-off. I would guess that never before has history been so comprehensively recorded on film. The sun and the temperature climbed higher together and the generally clear conditions proved a temptation for many airliner pilot who brought their big Miami-bound jets down low to let passenger view the rocket. The last to do so flew past barely 45 minute before lift-off. In the late stage of the count-down helicopters continuously patrolled the whole launch area, keeping inquisitive light aircraft at a safe distance.

The sound of helicopter blades had been almost unbroken from daylight as 18 helicopters chartered by N.A.S.A. ferried the V.V.I.P's in over the heads of the multitude blocking the highways outside all six entrance to the Cape Kennedy restricted area. The V.V.I.P's. Very Very Important persons, included ex-President Lyndon Johnson who, more than anyone else, had squeezed out of Congress the funds necessary for the Apollo programme. It was his first attendance at a major launching. Other V.V.I.P's included Herman Oberth, the Romanian born father of space-flight, and Mrs. Robert Goddard, widow of America's rocket pioneer who designed and fired the world's first liquid propellant rocket. The count-down proceeded with unhesitating smoothness, each loud speaker announcement confirming that all systems were "go" and ending with what seemed almost like a magical incantation: "It is- now T minus X minutes and Y seconds and counting." Lift-off time had been fixed months previously at 9.32 a.m. This was the sixth Saturn 5 rocket. Its five predecessors had all left the pad within seconds of their scheduled launch-time. Everyone wondered if this one would as well. As the minutes and seconds ticked away the tension grew. Attention focused more and more on the huge rocket standing majestically on its pad and thoughts were with the three astronauts performing final check in their sealed capsule.

At T minus 15 seconds a great hush descended except for the measured intonation of the count-down over the loudspeakers. But for the network commentators in vans parked at the back of the Pre enclosure nobody spoke and all eyes were glued to the rocket, its internal systems flexing in a computer-controlled pre-launch sequence. A puff of smoke from underneath the rocket at T minus 9 seconds signalled the start of the ignition phase. The computer, in its own way, had pressed the firing button. Next came a small spurt of flame as the turbine powered pumps began to feed propellants into the rocket motors. Then at T minus 3 seconds, all hell broke loose from under the rocket and flames shot out for almost a quarter of a mile on either side of the pad. Hundreds of feet into the air rose huge clouds of smoke and steam from the deluge of cooling water in the flame trench. Unperturbed by the cataclysm the computer checked that all five engines were running smoothly and flashed a signal to release the hold-down clamps on the launcher platform. Lift-off. The Saturn urged upward to the shout and cheers of the million spectators. Later we learned that the Saturn left the pad seven tenths of a second late-the computer was playing it cool!

At about T plus 5 seconds, as the tail of the rocket was about to clear the top of the 400-foot mobile launcher tower, the sound hit the Press site. It lacked the thunder-clap quality of the ignition of the smaller Saturn 1 rocket. Instead it rose in about half a second from silence to a deep, earth-shaking, rumbling roar which submerged all other sounds. It was awesome, as was the sight of the Saturn blasting its way into the sky on a 500-foot column of flame. Here was enough power to feed, if harnessed electrically, the whole electric power system of Western Europe, Great Britain included. To provide it the rocket motors were consuming propellant at the fantastic rate of fifteen tons every second. Cape Kennedy veterans claim that Apollo 11 was the best Saturn 5 firing to date from the spectator's point of view. Except for a brief disappearance behind a small cloud the whole period of first-stage burning was clearly visible all the way up and down the coast. Especially interesting was the way the huge exhaust flame cut a neat round hole through the thin cloud layer at about 25,000 feet. Although the noise was deafening it was not quite as loud as I expected.

The noise level produced by Saturn I, which has only one fifth the power of the Saturn 5 is also deafening but the din of the Saturn 5 has a more staccato quality and make the ground seem to bake and tremble like a small earthquake. Perhaps the very lowest sound frequencies -too low to hear--- contained enough energy to actually shake the body and make us imagine the ground trembled. It was certainly severe enough to shake any loose clothing. Whatever the true explanation, these low frequencies are not transmitted by TV or radio and the viewer or listener does not in consequence gain a full and complete impression of a Saturn rocket firing. Certainly the term "blast-off" has been aptly coined.

As the Saturn 5 climbed higher its noise was heard over a wider area. On one previous firing it was detected by instrument near New York, about 1000 miles away from the flight path of the rocket. When the Saturn 5 disappeared from view near the eastern horizon we were left with the voice of Mission Control as our only contact. The remainder of the flight was followed as readily from Australia as from Cape Kennedy. With everyone heading for home and their TV set the exodus caused one of the biggest traffic jams Florida had ever experienced. The snarled vehicles of all descriptions took hours to clear but the million sightseers were in a good mood their eyes had seen the glory and were satisfied. They would carry the image of the Apollo II rocket and its huge exhaust flame burnt into their memories for life.

The subsequent landing on the Moon and the televised moon-walk gave a tremendous boost to the morale of the American people, for years wearied and worried by the Vietnam conflict over sea and civil disorders at home. It was obvious to any visitor that Americans were once again proud to be American. And the long-suffering American taxpayer felt a lot less grudgingly toward the tens of billions of tax-dollars spent on space. This national feeling of euphoria will not last for ever, although new Apollo exploits will refresh it from time to time. But, having felt the heady exhilaration of success in space exploration, the American nation is now psychologically prepared for the next major goal-the voyage to Mars.

(By courtesy of Newcastle Morning Herald)

Parkes Radio Telescope website with some interesting articles about the Apollo Moon Landing

<http://www.csiro.au/science/Apollo-11-and-Parkes-telescope.htm>