

WOOMERA ATOM BOMB.

1953.  
Britain's second atomic weapons test was held in October this year at Emu Field, a site on the Woomera Rocket Range in Australia. It consisted of two major explosions, and the present film deals with the first of these, which took place on 15th October.

In this test the weapon was exploded on a steel tower which vanished instantaneously. The film shots of the actual explosion give an interesting impression of what is known as the Wilson Cloud. They show the white hot fireball in the centre and the passage on the ground of the rapidly expanding pressure wave. The pressure wave is followed by a suction wave (in the recent war many windows and doors were pulled outwards by the suction wave from high explosive bombs). While the suction lasts, the temperature is many degrees colder and if the air contains enough water vapour, fog forms. This condensation fog is illuminated by the light from the fireball and shows up in the film as a large rectangular bright patch. As the suction passes outwards, the fog evaporates.

As at Montebello, the Woomera trials were conducted by Sir William Penney and a team of scientists from the Ministry of Supply. They were assisted by Australian scientists who undertook certain important tasks in connection with the observation and measurement of the results. The Australian Government again gave their full co-operation and the preparation of the site hundreds of miles from the nearest town in the midst of trackless semi-desert was almost entirely an Australian effort. It meant nearly 9 months of unremitting toil in most arduous conditions. Temperatures here sometimes varied from as much as 112° in daytime to freezing point at night. One of the great problems was transporting equipment and although the greater part went in by air, there was still a very large quantity which had to be moved by vehicles from the staging base at Woomera.

Every vehicle or convoy had to be equipped like an expedition with water, stores, petrol and camping facilities to cover twice the time expected to be taken on the trip, the reconnaissance aircraft had to be kept in readiness for vehicles which might fail to arrive at the radio-equipped check points.

A 6-day a week airlift was operated by the R.A.A.F. and the R.A.F., flying York and Bristol transport aircraft, and up to 6 heavily-laden planes a day landed on the improvised air strip. Construction of the site was carried out by the Australian Army and the R.A.A.F. who worked up to 70 hours a week on the task.

December, 1953.

WOOMERA NEWSREEL

1. Desert scenes showing mulga trees. The base was far beyond the Woomera settlement, more than 400 miles beyond the nearest towns of Port Augusta and Adelaide, in the heart of trackless semi-desert. The terrain varied from such scenery as shown here to rolling sand dunes and drifts. Every vehicle or convoy setting out from Woomera had to be equipped like an expedition with water, stores, petrol and camping facilities to cover twice the time expected to take on the trip - to cover mishaps. Reconnaissance aircraft were kept in readiness to search for vehicles that might fail to report at radio controlled check points.
2. Bristol freighter arriving. A large proportion of supplies and equipment had to be taken in by air, and a six day a week airlift was operated by the Royal Australian Air Force and the Royal Air Force flying York and Bristol aircraft. An airstrip was improvised at the site and an average of six heavy aircraft a day landed there. The Bristol freighter seen landing here is carrying Mr G.A. Adams, Sir William Penney's deputy for the operation, and other members of the scientific staff.
3. Shadowgraph being erected. In preparation for the explosion much scientific equipment had to be placed in position ready to take instantaneous measurements. This shadowgraph will give information of the spread of heat and radiation.
4. Mr. Duncan Sandys, Minister of Supply, visits the site. When Mr Duncan Sandys visited Australia early in September he paid a special visit to the base, known as Hsu Field, to see the progress of work and the conditions under which the people there had to live. He is shown meeting members of the film and photo section.
5. Tower under construction. The weapon was exploded on a low tower which vanished immediately. The actual height was not revealed.
6. Cameras being prepared. All phases of the explosion were recorded on film, some of the cameras being specially built to take exposures at the rate of 100,000 a second. Here are some of the cameras being placed in position. The main body of observers were fifteen miles from the explosion and most of the shots seen later were taken from the same distance.



7. York aircraft of the RAF arrives carrying Sir William Penney. All the arduous preliminary construction work was carried out by members of the Australian forces under the control of the Australian Government. Scientific preparations were directed by Sir William Penney, recognized as one of the world's outstanding authorities on atomic weapons. He left England by air on 19th Sept and a few days later arrived at Ema Field. He can be seen taking his first look as the York aircraft lands. As he alights he is shown a tin of spais found on the site and is greeted by members of his staff and by Australians. In the intense daytime heat - temperatures varied from 112 degs in daytime to freezing point at night - it is advisable to wear suitable headgear and he is seen putting on his bushranger hat for the benefit of photographers.
8. The Australian flag flies over the field. This was another outstanding example of a combined operation, in which the Australian Government played a vital part by supplying men and materials for the construction of the site and by allowing the tests to take place in their territory. Some of their scientists also took part on the technical side. Their construction forces worked for nine months under the most difficult conditions and achieved results comparable to some of the greatest wartime feats. *Various shots of life on the site (Mostly night, but some day, tents etc. (at night))*
9. Mr Adams confers with some of the experts to assess progress. In the shots are Messrs Marshall, McKendall and Tomlin.
10. The weather, and particularly wind conditions, govern the exact date and time of the test. All preparations are complete, but now the right moment has to be awaited to make sure that no radioactive clouds are carried over inhabited areas. On this occasion there was a wait of about ten days. Here is the a York aircraft in the midst of a dust storm.
11. Met. men in conference. These men have to make the decision on the weather conditions. They are Cdr. F.L. Westwater, Mr M.H. Freeman (Air Ministry), Mr. H. Phillipot (Weather Service) and Mr. H. Ashton (an Australian expert).
12. A balloon carrying special equipment is released to help in deciding conditions.
13. The last few minutes shown on the control room clock. Watchers hear a voice recording the time and finally the last 5 - 4 - 3 - 2 - 1 NOW in the last five seconds. Flashing lights on an indicator board show that every piece of apparatus is ready to carry out tasks which in some cases may be over in a millionth of a second.

14. More apparatus being prepared to register effects of the explosion.
15. As the mushroom forms rockets are fired through the radioactive centre with apparatus designed to record valuable information, and to bring back samples of the
16. Distant shots ~~from~~ explosion showing formation of the smoke column. This is just as the watchers saw it. Cloud
17. Closer shots, showing the Wilson ~~cloud~~ (named after an early scientist).  
The first pressure wave is followed by a suction wave. While the suction lasts the temperature is many degrees colder and if the air contains enough water vapour fog forms. This condensation fog is illuminated by the light from the fireball at the centre of the explosion and shows up here as a large rectangular bright patch. As the suction passes outwards the fog evaporates and the cloud disappears.
18. Sir William Penney stands with his back to the tower waiting for the explosion. As soon as the first ~~bright~~ dazzling light is gone he turns round, looks carefully, turns back and waves a signal that the news can be flashed to England.
19. Shots of groups of observers, some examining apparatus.
20. Later stages of the explosion, with the cloud gradually being caught by winds at higher altitudes.
21. More shots of watchers.
22. Later stages of the cloud.
23. Canberra flies towards the cloud. A RAF Canberra with a crew of three flew from Woomera and soon after the explosion flew through the radioactive cloud. This ~~historical~~ flight into the unknown was made to find out exactly what conditions could be expected and to obtain further scientific and medical information. Tests made afterwards revealed no harmful effects to the crew or aircraft.
24. Excellent shots of the explosion and cloud effect, including slow motion shots of the cloud billowing up.
25. The initial fireball of the explosion is gradually obscured by rising clouds of sand and nitrogen oxides caused by chemical reactions in the air.
26. Another view of the explosion.