

50TH ANNIVERSARY CELEBRATION OF BOTH APOLLO 11 ACTIVE EXPERIMENTS: PASSIVE SEISMOMETER & DUST DETECTOR TEMPERATURES OVER 21 DAYS

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¹ In July, 1969, Professors O'Brien and Latham were Principal Investigators for the only two Apollo 11 active (powered) experiments, the Dust Detector Experiment (DDE) and the Passive Seismic Experiment (PSE), respectively.

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Buzz Aldrin's deployment on the Moon of the Early Apollo Scientific Experiments Package (EASEP) on 20 July 1969 was the first hands-on human deployment of a scientific observatory on another world. Here we celebrate the 50th Anniversary by showing for the first time the history of heating of EASEP by lunar dust caused by rocket exhausts the first time humans were launched from the Moon. Heating by more than 50⁰F above the planned maximum (140⁰F) temperature of the 47kg Passive Seismic Experiment (PSE) caused the EASEP active payload to be terminated after 21 days. The 0.27kg Dust Detector Experiment (DDE) measured dust and debris causing the heating when EASEP was deployed 17m from the LM Ascent rocket (*photo*). Consequently NASA decided to deploy Apollo 12 Apollo Lunar Surface Experiments Package (ALSEP) at 130m where DDE measurements showed its LM ascent caused only cleansing of collateral dust splashed on DDE solar cells during deployment.

We show together for the first time raw measurements of both Apollo 11 experiments from Word 37 and Word 33, the Housekeeping and Engineering sub-commutated Word in 1,060 bits per second EASEP telemetry. In addition we present for public use all 6-channel raw measurements of Apollo 11 Dust Detector Data (DDE). This foreshadows NASA making available for ready access internationally the complete raw measurements

of DDEs deployed by Apollo 11, 12, 14 and 15. Many technical talents were essential in the long journey of data after reception and tape recordings at the Deep Space array. Histories of pioneering successes enabling presentation of high-quality digital data here for ready use by personal computers globally are themselves causes for celebration. Key technical personnel are co-authors because Apollo 11 data reached us successfully after many examples of individual initiatives dedicated to conservation and applications of such unique environmental information.

