A Skylark in Spain (SL-1304)
(a contribution to '50 years of Space Physics' at Leicester University, UK, 1960 - 2010)

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1 Introduction

Unlike my story on SL-1306 I am only producing a short piece of text for this particular Skylark rocket flight. This is not really my story to tell since I was only involved for about nine months or so but I hope this collection of photos also compliments Roger Cooper's (Coops) longer term view of Skylarks at Leicester ('Rocket Man'). I joined the X-ray astronomy group at Leicester as a PhD student in October 1973. I started off supporting Martin Ricketts with the integration and test of the two Leicester experiments on the UK5 satellite (before launch) for about 4-5 months. I then moved on to assist Jeff Hoffman with SL-1304 till late in 1974. I was just a rookie back then and learned a lot from Jeff and Coops.

2 General background information

The SL-1304 flight was intended to observe a Lunar Occultation of the Crab Nebula and pulsar to provide information about its spatial extent and structure (in one dimension). The round was launched from the El Arenosillo test range, near Mazagón, in Spain which was operated by the Spanish Air Force. It is located on the south-western coast between Cadiz and Huelva. The flight path out over the Atlantic had a very tight launch window of only ± 10 seconds or so in order to be correctly positioned in space and time for the short duration event. The occultation predictions were calculated by Leslie Morrison from the Royal Greenwich Observatory at Herstmonceux. There was no recovery as the round fell in the sea.

There were two X-ray detector systems on SL-1304. The Leicester one was a dual layer, large area, gas proportional counter that sat under the nose cone. The front layer was the usual P10 gas mixture but the back layer was filled with Xenon (for flight) to get a reasonable high energy efficiency. Jeff was the mission project scientist, with Coops and Roy Daldorph as the Leicester technical support. The second experiment was mounted inside the round and looked out sideways through an ejecting door aperture. It was an array of four

high energy X-ray crystal / PMT detectors provided by the University of Tübingen (AIT - Rüdiger Staubert and Eckhard Kendziorra) and the Max Planck Institute for Extraterrestrial Physics (MPE - Claus Reppin). Ken Pounds and Joachim Trünper were also involved. The rocket was launched by the German mobile rocket launching team of DFVLR-MoRaBa. This organisation trucked out tons of gear to Spain.

Apart from helping prepare the Leicester detectors before going to Spain I also did quite a bit of computer modelling of the expected data profiles. In Spain I helped with a variety of things but my major function was to be 'our man' in the telemetry area to check house keeping and science data during integration, trial count-downs and for the actual flight. This meant working closely with the German DFVLR crew. Due to the exacting launch requirement there were two full practice count-downs. One during the day and a second during the night so as to be just like the real thing. I was only 22 when I arrived in Spain and celebrated my 23rd birthday at midnight at an evening barbeque birthday bash for one of the Germans. I have never been able to drink Cognac since and vaguely recall that I 'rested' for a long time in a ditch on my walk back to our rented house in Mazagón. Back then, Mazagón was a small and rather attractive seaside village. A holiday spot for the Spanish.

Since the project was in nearby Spain, a number of other Leicester folks and partners also managed to turn up a few days before the launch. Dave Watson (Watto) famously driving diagonally right across Spain from San Sebastion in a single day on his motorbike. I recall quite a few invited locals and VIP's were also on-range for the dawn launch as security needs were refreshingly rather modest.

Integration and preparation occurred from late August through to launch at 06:33:30 UT on 7 October 1974. There were no restrictions on photography at El Arenosillo (unlike at Woomera, Australia) so a variety of topics were covered. Coops has a lot of images of the boat building project and his DoDO Landrover trip (see his story for the Landrover Owners Magazine). Knowledgeable enthusiasts might wonder how the Skylark Sun pointing ACU worked, noting that the launch sequence occurs during twilight. Well, at the flight altitude, the Sun had risen (just).

3 Acknowledgements

I should like to thank Jan Lieser at the University of Tasmania for assistance in resurrecting old photographic slides. All the photographs were taken by the author (or by others using his camera) except for two Figures marked (*) whose precise provenance is now unknown.

References

[1] Staubert, R., Kendziorra, E., Trümper, J., Reppin, C., Hoffman, J.A., Pounds, K.A., Giles, A.B., & Morrison, L.V., The Crab Nebula: High energy X-ray observations of a Lunar occultation, 1975, ApJ, 201, L15

[2] Reppin, C., Kendziorra, E., Staubert, R., Trümper, J., Hoffman, J.A., Pounds, K.A., & Giles, A.B., The Size and Position of the High Energy X-Ray Source in the Crab Nebula Proceedings from the 14th International Cosmic Ray Conference, held in München, Germany, 15-29 August, 1975. Volume 1 (OG Session)., p.194

Figure 1: Campaign patch.

Figure 2: Another kind of 'launch'.

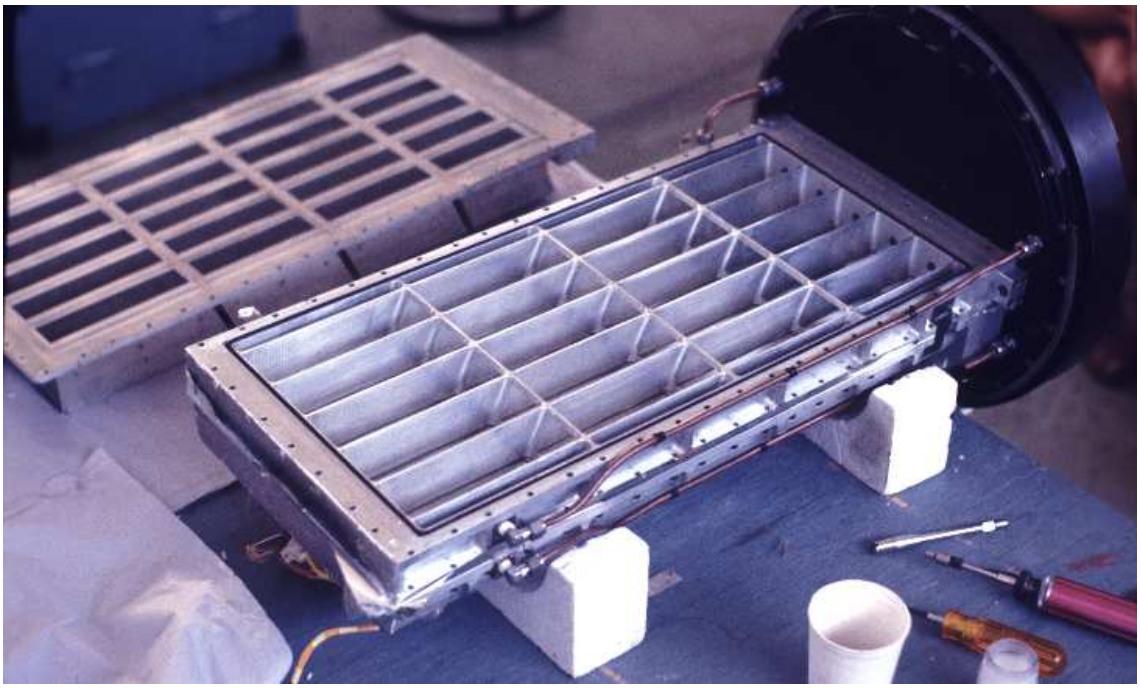

Figure 3: Inside Leicester detector.

Figure 4: Assembled Leicester detector.

Figure 5: Coops and Jeff gassing detector.

Figure 6: Jeff painting 'CLEA' on round.

Figure 7: BAC team in hanger.

Figure 8: Coops and Roy in hanger.

Figure 9: Not Australia but the road to El Arenosillo from our base at the seaside village of Mazagón.

Figure 10: Famous coloured sandstone cliffs right by the range - a great lunch spot on the beach. 'Leicester XRA, SL-1304' was mysteriously carved, in large letters, half way up the cliff on the right by ? Byron.

Figure 11: Possibly incorret handling procedure - From 'pointy end' Jeff, Coops, Roy and Bazza.

Figure 12: Launch site complex.

Figure 13: Group photo of entire team.

Figure 14: Front view of launcher.

Figure 15: Side view of launcher.

Figure 16: Launcher rail in semi-lowered position.

Figure 17: SL-1304 in launch position.

Figure 18: DFVLR telemetry crew. From left - Horst Haller, Rene Lutz, Eric Kubik and Gunter Reimann.

Figure 19: Telemetry reception complex.

Figure 20: Raven before dawn from block house (*).

Figure 21: Dawn launch site from telemetry.

Figure 22: Ignition from block house (*).

Figure 23: Launch from telemetry station.

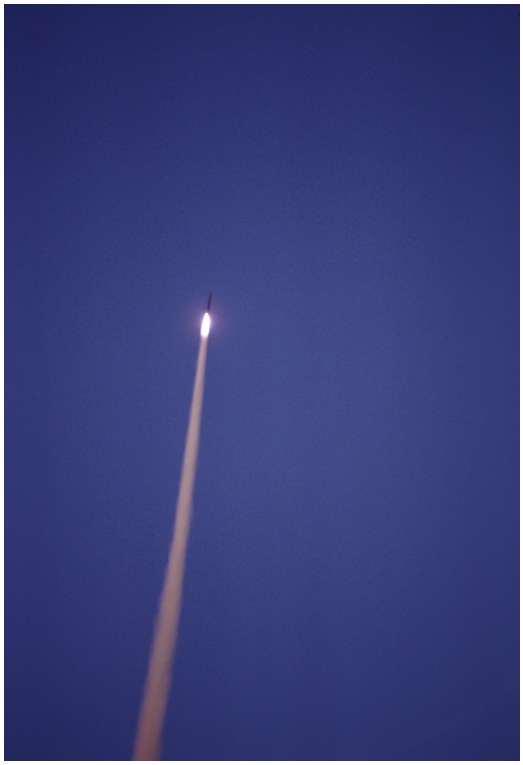

Figure 24: Raven climbing.

Figure 25: Goldfinch burnout and drop-off.

Figure 26: Trail past Moon.

Figure 27: Later trail past Moon.

Figure 28: SL-1304 is no more - a big blow torch job on the launcher paint work !

Figure 29: The morning after ! From left Roy, Eckhard, Rüdiger, Claus, Jeff, Coops and Bazza.

Figure 30: DoDO - Coops famous Landrover. From left Bazza, Coops, Roy and Jeff.