

Turbulent Boundary Layer Pressure Data

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Introduction

The data contained in this archive, including instrumentation, sensor layout, and flight conditions, are described in a separate journal publication.¹ Three test conditions are discussed in that paper, and are referred to in Table 1 of the paper as B101, B106, and B109. This archive contains folders named according to those three test conditions.

Condition Name	Altitude (ft)	Airspeed (M)
B101	48000	0.86
B106	32000	0.70
B109	24000	0.56

Each condition folder contains 62 MATLAB data files, each named *channel*.mat*, and an additional data file named *Header.mat*. The header file contains a MATLAB structure with miscellaneous information about the acquisition. Two relevant members of that structure are the scalar *SampleInterval* and cell array *Names*. The *Names* array maps microphone number to channel number, where the microphone number is of the form F0xx, with xx ranging from 01 to 65. Note that microphones 28, 29, 35, and 38 were not acquired, and channel 62 contains an analog IRIG timecode. The mapping of microphone to acquisition channel is also listed in the Excel file *Channel configuration.xlsx*. Microphone locations relative to a central microphone are given in the Excel file *Sensor locations.xlsx*. Note that the entire array was tilted 7 degrees to align with the expected inflight streamline. Each channel data file contains single precision time domain data in μPa (microPascals).

An example MATLAB m-file called *datacheck.m* is included to illustrate channel ordering, sensor locations, and basic computations with the data.

¹ Palumbo, D. "Determining correlation and coherence lengths in turbulent boundary layer flight data," *Journal of Sound and Vibration*, Volume 331, 2012, pp. 3721-3737. <https://doi.org/10.1016/j.jsv.2012.03.015>