Φ-OTDR (Distributed Acoustic Sensing) Notes

Data description

* One circumferential loop at the first flange above the base (Where the bolts were loosened)
* One circumferential loop at the second flange above the base
* Four cables along the height of the turbine tower (Axis a, b, c, d roughly spaced equally along the circumference of the turbine tower)

**Indexing**

ODH 4 data (Readouts at 1.0209523 m, Gauge length: 2.0419046 m)

**Axis a**

* Bottom Section: [41, 61]
* Middle Section: [61, 88]
* Top Section: [88, 115]

**Axis b**

* Bottom Section: [172, 192] (reversed)
* Middle Section: [146, 172] (reversed)
* Top Section: [119, 146] (reversed)

**Axis c**

* Bottom Section: [198, 218]
* Middle Section: [218, 244]
* Top Section: [244, 271]

**Axis d**

* Bottom Section: [328, 348] (reversed)
* Middle Section: [303, 328] (reversed)
* Top Section: [275, 303] (reversed)

ODH 3 data (Readouts at 8.1676184 m, Gauge length: 8.1676184 m)

**Axis a**

* Bottom Section: [5, 7]
* Middle Section: [8, 11]
* Top Section: [12, 14]

**Axis b**

* Bottom Section: [22, 24] (reversed)
* Middle Section: [18, 21] (reversed)
* Top Section: [15, 17] (reversed)

**Axis c**

* Bottom Section: [25, 27]
* Middle Section: [28, 30]
* Top Section: [31, 33]

**Axis d**

* Bottom Section: [41, 43] (reversed)
* Middle Section: [38, 41] (reversed)
* Top Section: [35, 37] (reversed)

Naming convention for preprocessing data

**March short experiment naming convention for preprocessed das data**

bc1: bolts as is when we arrived (March 05, 2024)

bc2: bolts as is when we arrived, but different wind conditions on a different day (March 07, 2024)

bc3: bolt E loose to 30 degrees (March 07, 2024)

bc4: bolt E loose from 30 degrees to 60 degrees (March 07, 2024)

bc5: bolt E back to 0 degrees (March 08, 2024)

bc6: bolt A replaced, and all bolts tightened (March 08, 2024)

‘Name of preprocessed das file’: ’Time begin’, ‘Time end’ (Note times are in CDT, Das time will read +6 hours in datafile! e.g. 2024-03-05 11:30:00 CDT -> 2024-03-05 1**7**:30:00 Das time)

**March 05, 2024**

bc1

operation-bc1: 2024-03-05 11:40:08 AM, 2024-03-05 12:10:00 PM

* das time: 2024-03-05 17:40:08, 2024-03-05 18:10:00

idle-bc1: 2024-03-05 12:13:30 PM, 2024-03-05 12:37:12 PM

* das time: 2024-03-05 18:13:30, 2024-03-05 18:37:12

brake-bc1: 2024-03-05 12:42:30 PM, 2024-03-05 12:53:45 PM

* das time: 2024-03-05 18:42:30, 2024-03-05 18:53:45

hammer-bc1: 2024-03-05 01:38:00 PM - 2024-03-05 1:52:00 PM

* das time: 2024-03-05 19:38:00, 2024-03-05 19:52:00

**March 07, 2024**

bc2

operation-bc2: 2024-03-07 10:29:00 AM, 2024-03-07 10:54:00 AM

* das time: 2024-03-07 16:29:00, 2024-03-07 16:54:00

idle-bc2: 2024-03-07 10:58:00 AM, 2024-03-07 11:22:00 AM

* das time: 2024-03-07 16:58:00, 2024-03-07 17:22:00

brake-bc2: 2024-03-07 11:26:20 AM, 2024-03-07 11:37:00 AM

* das time: 2024-03-07 17:26:20, 2024-03-07 17:37:00

hammer-bc2: 2024-03-07 12:02:40 PM, 2024-03-07 12:13:00 PM

* das time: 2024-03-07 18:02:40, 2024-03-07 18:13:00

bolt-loose-bc2-bc3: 2024-03-07 12:17:25 PM, 2024-03-07 12:18:00 PM

* das time: 2024-03-07 18:17:25, 2024-03-07 18:18:00

bc3

operation-bc3: 2024-03-07 12:28:30 PM, 2024-03-07 12:52:11 PM

* das time: 2024-03-07 18:28:30, 2024-03-07 18:52:11

idle-bc3: 2024-03-07 12:57:00 PM, 2024-03-07 01:19:10 PM

* das time: 2024-03-07 18:57:00, 2024-03-07 19:19:10

brake-bc3: 2024-03-07 01:23:00 PM, 2024-03-07 01:36:00 PM

* das time: 2024-03-07 19:23:00, 2024-03-07 19:36:00

hammer-bc3: 2024-03-07 01:47:00 PM, 2024-03-07 1:58:00 PM

* das time: 2024-03-07 19:47:00, 2024-03-07 19:58:00

bolt-loose-bc3-bc4: 2024-03-07 02:02:15 PM, 2024-03-07 02:02:30 PM

* das time: 2024-03-07 20:02:15, 2024-03-07 20:02:30

bc4

operation-bc4: 2024-03-07 02:08:40 PM, 2024-03-07 02:30:00 PM

* das time: 2024-03-07 20:08:40, 2024-03-07 20:30:00

idle-bc4: 2024-03-07 02:33:00 PM, 2024-03-07 02:56.40 PM

* das time: 2024-03-07 20:33:00, 2024-03-07 20:56:40

brake-bc4: 2024-03-07 03:00:00 PM, 2024-03-07 03:12:00 PM

* das time: 2024-03-07 21:00:00, 2024-03-07 21:12:00

hammer-bc4: 2024-03-07 03:19:50 PM, 2024-03-07 03:32:00 PM

* das time: 2024-03-07 21:19:50, 2024-03-07 21:32:00

bolt-tight-bc4-bc5: 2024-03-07 03:35:10 PM, 2024-03-07 03:38:00 PM

* das time: 2024-03-07 21:35:10, 2024-03-07 21:38:00

**March 08, 2024**

bc5

operation-bc5: 2024-03-08 08:28:00 AM, 2024-03-08 08:42:00 AM (Curtailment occurred at 08:42:50 AM)

* das time: 2024-03-08 14:28:00, 2024-03-08 14:42:00

idle-bc5: 2024-03-08 08:47:20 AM, 2024-03-08 09:10:12 AM

* das time: 2024-03-08 14:47:20, 2024-03-08 15:10:12

brake-bc5: 2024-03-08 09:13:47 AM, 2024-03-08 09:25:30 AM

* das time: 2024-03-08 15:13:47, 2024-03-08 15:25:30

yawing-bc5: 2024-03-08 09:57:00 AM, 2024-03-08 10:03:00 AM

* das time: 2024-03-08 15:57:00, 2024-03-08 16:03:00

hammer-bc5: 2024-03-08 10:27:45 AM, 2024-03-08 10:40:50 AM

* das time: 2024-03-08 16:27:45, 2024-03-08 16:40:50

bolt-tight-bc5-bc6: 2024-03-08 10:48:20 AM, 2024-03-08 11:41:00 AM

* das time: 2024-03-08 16:48:20, 2024-03-08 17:41:00

bc6 (No operation, all curtailed)

idle-bc6: 2024-03-08 12:00:45 PM, 2024-03-08 12:21:20 PM

* das time: 2024-03-08 18:00:45, 2024-03-08 18:21:20

brake-bc6: 2024-03-08 12:24:40 PM, 2024-03-08 12:37:00 PM

* das time: 2024-03-08 18:24:40, 2024-03-08 18:37:00

yawing-bc6: 2024-03-08 12:43:10 PM, 2024-03-08 12:51:00 PM

* das time: 2024-03-08 18:43:10, 2024-03-08 18:51:00

hammer-bc6: 2024-03-08 01:02:06 PM, 2024-03-08 01:13:25 PM

* das time: 2024-03-08 19:02:06, 2024-03-08 19:13:25