

Simple_Battery_Analysis

March 30, 2020

Firstly, we need to upload the raw battery xlsx spreadsheet (initial data set), or csv file (later data sets). Then we read it into a dataframe (b). Then plot out by hubid.

```
[1]: import pandas as pd
import dateutil.parser as du
from datetime import datetime as dt
from pandas.plotting import register_matplotlib_converters

register_matplotlib_converters()
csv = True

try:
    if csv:
        # local file load (from subdirectory)
        #full_set = pd.read_csv ('data/batteryDetails.csv', parse_dates=[5])
        full_set = pd.read_csv ('https://github.com/timcoote/ColabBattery/blob/
→master/data/batteryDetails.csv?raw=true', header=None, parse_dates=[5])
        full_set.columns = ['Hub Mac', 'ClientID', 'Device Slot ID + Node',
→'Device Type', 'Epoch TS', 'Date Time',
        'Battery']
    else:
        full_set = pd.read_excel ('battery analysis.xlsx')
except FileNotFoundError as fnf:
    print ("cannot find excel file with battery readings:", fnf)

full_set ['ClientID'] = full_set ['ClientID'].apply (lambda x: x.strip())
```

Remove data from before the last HubV2 update as the quality is unknown before then.

```
[2]: valid_set= full_set[full_set ['Date Time'] > du.parse ("2019-5-15 00:00Z")]
#valid_set= full_set[full_set ['Date Time'] > du.parse ("2019-5-15")]

#print (min (valid_set['Date Time']))
print (min (full_set['Date Time']))
```

2018-03-12 11:01:04+00:00

Remove known bad hubs from this set of data: D, E, F and G. The hubids can be identified in the section below Section ??

```
[3]: bad_hubs = ['5aa147d1bbda2e2cc46bb73e', '5a992264bbda2e2cc46b2f21',
    ↪ '5a992175bbda2e2cc46b2d23', '5b1e3f62c7fe056c961f0639']
print (valid_set [valid_set ['ClientID'].isin (bad_hubs)])

print ("starting number of devices", len (valid_set))
valid_set = valid_set [~valid_set ['ClientID'].isin (bad_hubs)]
print ("number of devices after ignoring {} hubs: {}".format (len (bad_hubs),
    ↪ len (valid_set)))
```

	Hub Mac	ClientID \
1638	b8:27:eb:20:13:1e	5a992175bbda2e2cc46b2d23
1639	b8:27:eb:20:13:1e	5a992175bbda2e2cc46b2d23
1640	b8:27:eb:20:13:1e	5a992175bbda2e2cc46b2d23
1789	b8:27:eb:20:13:1e	5a992175bbda2e2cc46b2d23
1790	b8:27:eb:20:13:1e	5a992175bbda2e2cc46b2d23
1879	b8:27:eb:41:e9:d5	5a992264bbda2e2cc46b2f21
1908	b8:27:eb:41:e9:d5	5a992264bbda2e2cc46b2f21
1949	b8:27:eb:41:e9:d5	5a992264bbda2e2cc46b2f21
1950	b8:27:eb:41:e9:d5	5a992264bbda2e2cc46b2f21
1978	b8:27:eb:41:e9:d5	5a992264bbda2e2cc46b2f21
2006	b8:27:eb:41:e9:d5	5a992264bbda2e2cc46b2f21
2066	b8:27:eb:41:e9:d5	5a992264bbda2e2cc46b2f21
2094	b8:27:eb:41:e9:d5	5a992264bbda2e2cc46b2f21
2116	b8:27:eb:41:e9:d5	5a992264bbda2e2cc46b2f21
2117	b8:27:eb:41:e9:d5	5a992264bbda2e2cc46b2f21
2152	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2153	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2203	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2204	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2205	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2206	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2207	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2208	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2209	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2210	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2211	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2212	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2213	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2214	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2215	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2216	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2217	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2218	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2219	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2220	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2221	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2222	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e

2223	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2250	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2251	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2273	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2274	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2308	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2309	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2335	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2336	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2371	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2372	b8:27:eb:18:5e:6d	5aa147d1bbda2e2cc46bb73e
2905	b8:27:eb:7a:ed:a5	5b1e3f62c7fe056c961f0639

	Device Slot ID + Node	Device Type	Epoch TS \
1638	6968db56-d0a0-45de-bff3-996870372659-3	pir	1558236761946
1639	6968db56-d0a0-45de-bff3-996870372659-3	pir	1560012795923
1640	6968db56-d0a0-45de-bff3-996870372659-3	pir	1560012795990
1789	c12bfb26-3109-4008-b035-0db92631598c-4	pir	1561259897242
1790	c12bfb26-3109-4008-b035-0db92631598c-4	pir	1563193255199
1879	2349c46e-0d4a-424e-8587-8313cae2a40c-7	pir	1558379879600
1908	89acb87e-57fe-49ae-ab7a-d86f43706d81-9	pir	1558377045337
1949	9e2086c5-9785-4e44-8072-a42afd8c02db-8	contact	1558382096529
1950	9e2086c5-9785-4e44-8072-a42afd8c02db-13	contact	1558383291263
1978	a7086c93-b721-4bb4-b44f-4865b459615f-3	pir	1558379429360
2006	b8357a9c-f26f-4caf-803d-5913f4ddd964-10	pir	1558379824502
2066	bbc98359-6384-452a-8818-80ce4a88302b-5	pir	1558380112798
2094	bff035cb-16a2-447e-8995-ed20a98a352d-6	pir	1558378201998
2116	e230c038-3e35-4fa0-bdb1-b4eaf63cd2a0-15	contact	1558388092482
2117	e230c038-3e35-4fa0-bdb1-b4eaf63cd2a0-15	contact	1558388092956
2152	062ff494-e78b-424b-a610-8c14d3733cd8-7	pir	1558384363460
2153	062ff494-e78b-424b-a610-8c14d3733cd8-7	pir	1558840111610
2203	240dc142-68a2-4430-8c4c-8a53a0233f41-3	pir	1558383468279
2204	240dc142-68a2-4430-8c4c-8a53a0233f41-3	pir	1558606414550
2205	240dc142-68a2-4430-8c4c-8a53a0233f41-3	pir	1558606414618
2206	240dc142-68a2-4430-8c4c-8a53a0233f41-3	pir	1558606414686
2207	240dc142-68a2-4430-8c4c-8a53a0233f41-3	pir	1558606414748
2208	240dc142-68a2-4430-8c4c-8a53a0233f41-3	pir	1558685481620
2209	240dc142-68a2-4430-8c4c-8a53a0233f41-3	pir	1558685481711
2210	240dc142-68a2-4430-8c4c-8a53a0233f41-3	pir	1558685481772
2211	240dc142-68a2-4430-8c4c-8a53a0233f41-3	pir	1558685481833
2212	240dc142-68a2-4430-8c4c-8a53a0233f41-3	pir	1558836321119
2213	240dc142-68a2-4430-8c4c-8a53a0233f41-3	pir	1558843484069
2214	240dc142-68a2-4430-8c4c-8a53a0233f41-3	pir	1558965648722
2215	240dc142-68a2-4430-8c4c-8a53a0233f41-3	pir	1558965648792
2216	240dc142-68a2-4430-8c4c-8a53a0233f41-3	pir	1558965648855
2217	240dc142-68a2-4430-8c4c-8a53a0233f41-3	pir	1558965648918
2218	240dc142-68a2-4430-8c4c-8a53a0233f41-3	pir	1558965648999
2219	240dc142-68a2-4430-8c4c-8a53a0233f41-3	pir	1558965649086

2220	240dc142-68a2-4430-8c4c-8a53a0233f41-3	pir	1558972834602
2221	240dc142-68a2-4430-8c4c-8a53a0233f41-3	pir	1558972834674
2222	240dc142-68a2-4430-8c4c-8a53a0233f41-3	pir	1558972834744
2223	240dc142-68a2-4430-8c4c-8a53a0233f41-3	pir	1558972834817
2250	2c26f7c8-3528-43bc-ab87-f76b520e7e41-5	pir	1558386351711
2251	2c26f7c8-3528-43bc-ab87-f76b520e7e41-5	pir	1558839818881
2273	6b301afd-8952-43f9-869e-4265acb3bca4-14	pir	1558386874647
2274	6b301afd-8952-43f9-869e-4265acb3bca4-14	pir	1558840324075
2308	6f1d580e-477d-48ba-9012-3ba3579f4518-4	pir	1558382490032
2309	6f1d580e-477d-48ba-9012-3ba3579f4518-4	pir	1558834951583
2335	8637651f-472d-4505-afe1-66e040525e81-13	contact	1558401091178
2336	8637651f-472d-4505-afe1-66e040525e81-13	contact	1558851312920
2371	c9a4d268-d69f-4103-9566-41ccb6c0d63-6	pir	1558384352044
2372	c9a4d268-d69f-4103-9566-41ccb6c0d63-6	pir	1558835609965
2905	46a23c05-2275-4dba-a1ca-fb9655cbb1a2-4	pir	1559163329484

	Date	Time	Battery
1638	2019-05-19	03:32:41+00:00	85
1639	2019-06-08	16:53:15+00:00	77
1640	2019-06-08	16:53:15+00:00	77
1789	2019-06-23	03:18:17+00:00	85
1790	2019-07-15	12:20:55+00:00	77
1879	2019-05-20	19:17:59+00:00	100
1908	2019-05-20	18:30:45+00:00	100
1949	2019-05-20	19:54:56+00:00	100
1950	2019-05-20	20:14:51+00:00	100
1978	2019-05-20	19:10:29+00:00	100
2006	2019-05-20	19:17:04+00:00	100
2066	2019-05-20	19:21:52+00:00	100
2094	2019-05-20	18:50:01+00:00	100
2116	2019-05-20	21:34:52+00:00	100
2117	2019-05-20	21:34:52+00:00	100
2152	2019-05-20	20:32:43+00:00	100
2153	2019-05-26	03:08:31+00:00	100
2203	2019-05-20	20:17:48+00:00	100
2204	2019-05-23	10:13:34+00:00	88
2205	2019-05-23	10:13:34+00:00	88
2206	2019-05-23	10:13:34+00:00	88
2207	2019-05-23	10:13:34+00:00	88
2208	2019-05-24	08:11:21+00:00	81
2209	2019-05-24	08:11:21+00:00	81
2210	2019-05-24	08:11:21+00:00	81
2211	2019-05-24	08:11:21+00:00	81
2212	2019-05-26	02:05:21+00:00	77
2213	2019-05-26	04:04:44+00:00	74
2214	2019-05-27	14:00:48+00:00	66
2215	2019-05-27	14:00:48+00:00	66
2216	2019-05-27	14:00:48+00:00	66

```

2217 2019-05-27 14:00:48+00:00      66
2218 2019-05-27 14:00:48+00:00      66
2219 2019-05-27 14:00:49+00:00      66
2220 2019-05-27 16:00:34+00:00      55
2221 2019-05-27 16:00:34+00:00      55
2222 2019-05-27 16:00:34+00:00      55
2223 2019-05-27 16:00:34+00:00      55
2250 2019-05-20 21:05:51+00:00     100
2251 2019-05-26 03:03:38+00:00     100
2273 2019-05-20 21:14:34+00:00     100
2274 2019-05-26 03:12:04+00:00     100
2308 2019-05-20 20:01:30+00:00     100
2309 2019-05-26 01:42:31+00:00     100
2335 2019-05-21 01:11:31+00:00     100
2336 2019-05-26 06:15:12+00:00     100
2371 2019-05-20 20:32:32+00:00     100
2372 2019-05-26 01:53:29+00:00     100
2905 2019-05-29 20:55:29+00:00      92
starting number of devices 23325
number of devices after ignoring 4 hubs: 23276

```

C's hub changed at the end of July. Therefore are all of her devices before that day should be ignored.

A installed on 31/7, B on 3/9. Trim these times out.

```

[4]: # code to strip out the bad data from more recently installed hubs

late_installs = {'5a8eef6b0446f007bd4eff0d': du.parse ("2019-7-31 00:00Z"),
↳ '5d3ea83ac7fe0554e22ae04c': du.parse ("2019-7-31 00:00Z"),
      'undefined': du.parse ("2019-9-3 00:00Z")}
#print (late_installs)

print ("before removing pre-install data {}".format (len (valid_set)))

#print (valid_set [valid_set ['ClientID'] == '5a8eef6b0446f007bd4eff0d']["Date_
↳ Time"])

#print (valid_set.__class__)

for k, v in late_installs.items ():
    valid_set.drop (valid_set [(valid_set.ClientID == k) & (valid_set['Date_
↳ Time'] <= v)].index, inplace=True)
    #print (valid_set [(valid_set.ClientID == k) ])

print ("after removing pre-install data {}".format (len (valid_set)))

```

before removing pre-install data 23276

after removing pre-install data 23238

Plot out the battery reporting for each device, by hub. The purpose of the plot is to highlight gross errors / inconsistencies.

```
[5]: import matplotlib.pyplot as plt
import matplotlib.dates as mdates

%matplotlib inline

# plot out the battery events into existing matplotlib axes. Annoyingly, ↵
↪matplotlib creates differently
# shaped sets of axes for 1 column vs >1 column.
def plotting (axs, figs, rows, cols):
    count=0
    r,c = 0, 0
    fig = 0
    hubs = []
    axi = axs[fig]
    #fig, ax = plt.subplots (nrows=8, ncols=4, sharex=True , figsize = (18,32))
    #fig, ax = plt.subplots (nrows=8, ncols=4, sharex=True , figsize = (20, 12))

    #for h, d in valid_set.groupby ('Hub Mac'):
        for h, d in valid_set.groupby ('ClientID'):
            #if '5d25' not in h:
            # continue
                if cols==1: # non-orthogonal api :-(
                    ax = axi[r]
                else:
                    ax = axi[r,c]
                ax.set_title ("Hub: {}".format (h))
                #print (h)
                h_str = "{}\n".format (h)
                #hubs.append (h)
                box = ax.get_position()
                ax.set_position([box.x0, box.y0, box.width * 0.8, box.height])

                loc=mdates.DayLocator(interval=56)
                timfmt = mdates.AutoDateFormatter(loc)
                ax.xaxis.set_major_formatter (timfmt)
                ax.xaxis.set_major_locator(loc)
                ax.xaxis.set_tick_params(rotation=30)

                for v, g in d.groupby ('Device Slot ID + Node'):
                    # ax.scatter (x=g['Date Time'], y=g['Battery'], alpha=0.3, label=v[0:5])
                    ax.plot_date (x=g['Date Time'], y=g['Battery'], alpha=0.3, label=v)↵
                    ↪#[0:8])
```

```

        #print (v)
        h_str += "{}\n".format (v)
# Put a legend to the right of the current axis
        ax.legend(loc='center left', bbox_to_anchor=(1, 0.5))
#     ax.legend()

#     ax[count].xaxis.grid(True)
        r += 1
        if r >= rows:
            c += 1
            if c >= cols:
                c = 0
                fig += 1
                if fig < figs:
                    ax = axs[fig]
            r = 0
        hubs.append (h_str)
    return hubs

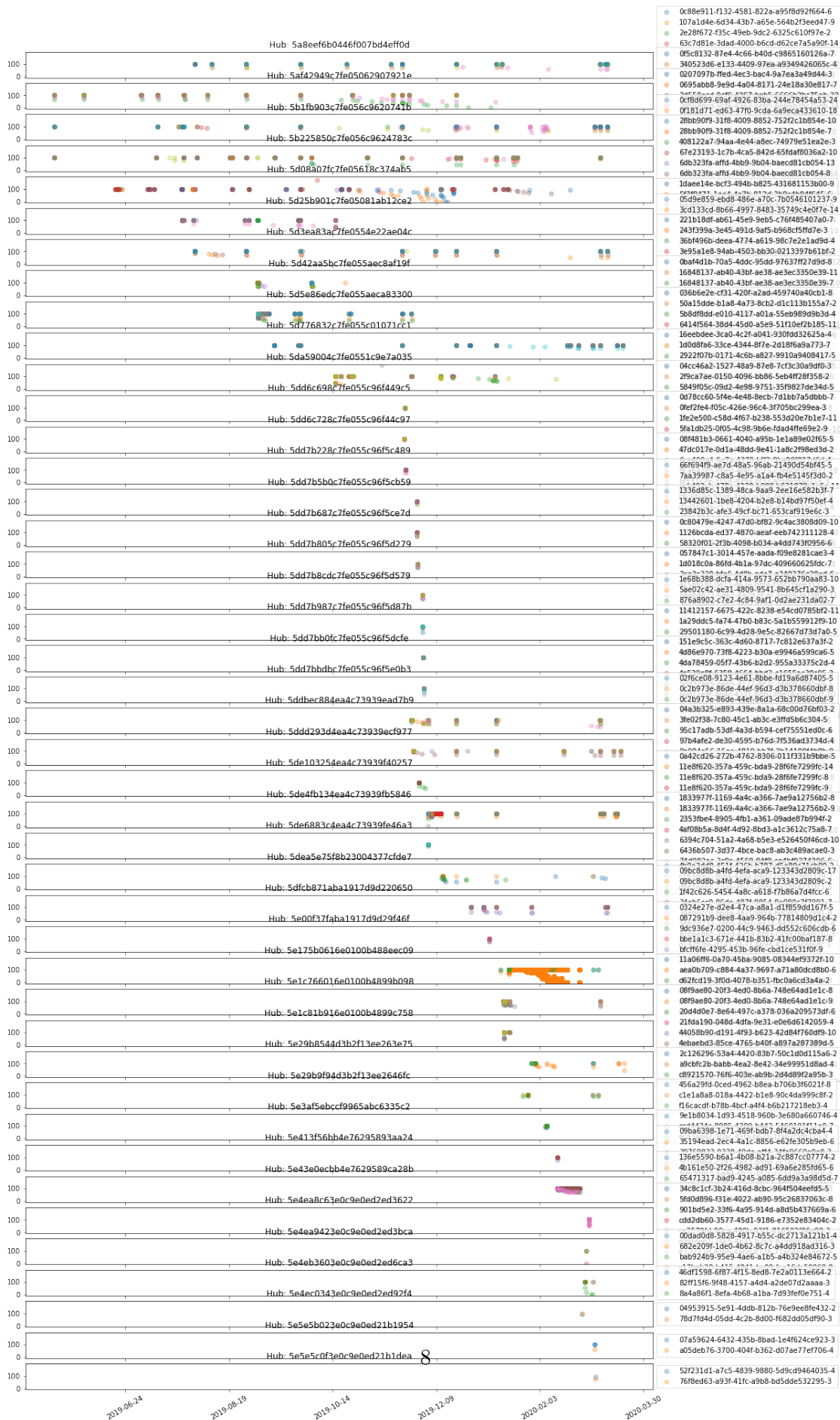
figs = 1
# this will work with >1 column, but the shape needs to be rectangular.
rows, cols = len (set (valid_set ["ClientID"])), 1
ax=[]

# create the layout of the axes for plotting
for i in range (figs):
    fig, axes = plt.subplots (nrows=rows, ncols=cols, sharex=True, sharey=True,
        ↳figsize = (20, 35))
    ax.append (axes)

# plot the results and grab the identity of the hubs/devices from the
    ↳spreadsheet
hubs = plotting (ax, figs, rows, cols)

# do not need to save these now. Previously, this was an intermediate store
#with open ('hubs', 'w') as of:
#     for h in hubs:
#         of.write ("{}\n".format (h))

```




```
[6]: min (valid_set['Date Time'])
```

```
[6]: Timestamp('2019-05-16 10:03:14+0000', tz='UTC')
```

```
[7]: ls=valid_set
```

How many battery powered devices are there with the valid dataset.

```
[8]: # enumerate relevant devices and count them. The list comprehension enumerates
    ↳ the earliest battery time for each device
len ([ (x, min (ls[ls['Device Slot ID + Node']] == x['Battery'])) for x in set (ls
    ↳ ['Device Slot ID + Node']) ] )
```

```
[8]: 337
```

How many of the devices have ever had a battery level lower than 100? Some of these have always been < 100

```
[9]: low = [(x, min (ls[ls['Device Slot ID + Node']] == x['Battery'])) for x in set
    ↳ (ls ['Device Slot ID + Node']) if min (ls[ls['Device Slot ID +
    ↳ Node']] == x['Battery']) < 100]
print (len (low))
```

```
101
```

1 Devices that Have Reported loss of Battery Capacity

Print out the device slot/ZWave node id, and all the readings from the devices that have ever had a battery reading < 100. This plot shows that at least one device had non-monotonic readings. We believe, but cannot prove, that it has had its battery replaced. So we will remove it later in the process.

```
[10]: for did in [x[0] for x in low]:
    print (did)
    #print (valid_set[valid_set['Device Slot ID + Node'] == did][['Battery',
    ↳ 'Date Time']])
    print (valid_set[valid_set['Device Slot ID + Node'] == did][['Battery',
    ↳ 'Date Time', 'Device Type']])
```

```
34eb6cc0-86de-487f-9854-8e080c7f7991-8
```

	Battery	Date Time	Device Type
27735	100	2019-12-27 16:24:14+00:00	contact
27736	60	2019-12-27 16:24:32+00:00	contact
27741	100	2020-01-03 14:37:38+00:00	contact
27742	100	2020-01-03 14:37:49+00:00	contact
27743	80	2020-01-03 14:38:01+00:00	contact

27744	70	2020-01-04	10:05:43+00:00	contact
27745	60	2020-01-05	08:05:27+00:00	contact
27746	60	2020-01-10	12:42:03+00:00	contact
27748	55	2020-01-12	07:58:33+00:00	contact
27750	55	2020-01-29	12:22:08+00:00	contact
27751	55	2020-01-29	18:09:37+00:00	contact
27753	55	2020-03-09	13:50:47+00:00	contact
27755	55	2020-03-10	13:04:49+00:00	contact

11e8f620-357a-459c-bda9-28f6fe7299fc-14

	Battery		Date Time	Device Type
27561	75	2019-12-11	10:58:08+00:00	contact
27563	75	2019-12-20	01:31:11+00:00	contact
27564	75	2020-01-10	13:54:47+00:00	contact
27566	75	2020-03-06	17:36:19+00:00	contact
27569	75	2020-03-08	15:40:17+00:00	contact
27571	75	2020-03-14	22:49:10+00:00	contact
27572	75	2020-03-14	22:49:10+00:00	contact
27573	75	2020-03-14	22:49:10+00:00	contact
27575	75	2020-03-15	22:02:29+00:00	contact

6cbb65f-8fd0-4dd7-b13c-0e0d3bf1eb75-10

	Battery		Date Time	Device Type
25800	100	2019-11-25	15:57:15+00:00	contact
25801	100	2019-11-25	15:57:27+00:00	contact
25802	95	2019-12-03	09:34:10+00:00	contact
25803	90	2019-12-04	07:29:23+00:00	contact
25804	90	2019-12-04	19:07:53+00:00	contact
25805	90	2019-12-19	16:26:14+00:00	contact
25806	90	2020-01-10	15:47:30+00:00	contact
25807	55	2020-03-01	18:17:53+00:00	contact
25808	50	2020-03-05	06:13:23+00:00	contact
25809	50	2020-03-06	13:35:01+00:00	contact

d5ef3981-ad34-43c8-977e-09ceafa4f7f8-2

	Battery		Date Time	Device Type
25523	100	2019-10-15	09:49:53+00:00	pir
25524	100	2019-10-15	09:49:54+00:00	pir
25525	40	2019-10-15	09:50:37+00:00	pir
25526	100	2019-10-15	10:46:22+00:00	pir
25527	100	2019-10-15	10:46:23+00:00	pir
25528	100	2019-10-15	10:46:51+00:00	pir
25529	100	2019-10-15	10:46:52+00:00	pir
25530	100	2019-10-15	12:47:04+00:00	pir
25531	100	2019-10-18	10:55:17+00:00	pir
25532	100	2019-10-18	12:55:28+00:00	pir
25533	100	2019-10-23	07:13:44+00:00	pir
25534	100	2019-10-23	07:13:44+00:00	pir
25535	100	2019-10-23	09:13:50+00:00	pir
25536	100	2019-10-24	11:20:24+00:00	pir
25537	100	2019-10-24	13:20:46+00:00	pir

25538	100	2019-10-24	13:20:46+00:00	pir
25539	100	2019-10-24	15:21:06+00:00	pir
25540	100	2019-10-24	17:21:24+00:00	pir
25541	100	2019-11-25	14:56:05+00:00	pir
25542	100	2019-11-25	16:56:30+00:00	pir
25543	100	2019-12-11	11:49:21+00:00	pir
25544	100	2019-12-17	19:58:45+00:00	pir
25545	100	2020-01-09	16:46:14+00:00	pir

696988c5-6a44-4b7c-bf2c-c03278e43a0c-8

	Battery		Date Time	Device Type
44950	100	2020-02-12	11:07:52+00:00	contact
44951	75	2020-02-12	11:08:09+00:00	contact

b4957289-ec2e-4c4f-96e9-107a997e64ff-4

	Battery		Date Time	Device Type
23019	100	2019-07-24	13:56:58+00:00	pir
23020	100	2019-07-24	13:56:58+00:00	pir
23021	100	2019-07-24	15:56:59+00:00	pir
23022	100	2019-07-25	17:54:42+00:00	pir
23023	100	2019-07-30	17:38:37+00:00	pir
23024	100	2019-08-27	10:56:47+00:00	pir
23025	100	2019-08-29	16:59:31+00:00	pir
23026	100	2019-09-25	08:53:28+00:00	pir
23027	100	2019-09-25	14:54:26+00:00	pir
23028	100	2019-09-26	10:57:10+00:00	pir
23029	100	2019-09-26	10:57:10+00:00	pir
23030	100	2019-10-15	09:06:42+00:00	pir
23031	48	2019-10-15	09:06:43+00:00	pir

588ff33a-0379-43a8-8e11-6d267c0e5182-11

	Battery		Date Time	Device Type
44861	100	2020-01-14	14:07:41+00:00	contact
44862	100	2020-01-14	14:07:53+00:00	contact
44863	50	2020-01-14	14:08:16+00:00	contact
44864	100	2020-01-14	14:09:12+00:00	contact
44865	55	2020-01-14	14:09:31+00:00	contact
44866	100	2020-01-14	14:10:38+00:00	contact
44867	100	2020-01-17	13:50:46+00:00	contact
44868	100	2020-01-17	13:50:46+00:00	contact

0f181d71-ed63-47f0-9cda-6a9eca433610-24

	Battery		Date Time	Device Type
3416	55	2019-10-02	15:13:24+00:00	contact
3417	45	2019-10-03	15:47:07+00:00	contact
3419	45	2019-11-01	19:54:16+00:00	contact
3420	45	2019-11-20	14:12:11+00:00	contact
3422	45	2019-12-19	15:35:38+00:00	contact
3424	45	2019-12-22	00:39:09+00:00	contact
3427	45	2020-01-10	12:38:06+00:00	contact
3430	45	2020-01-19	20:07:46+00:00	contact
3432	100	2020-01-21	15:09:08+00:00	contact

3433	100	2020-01-21	15:09:08+00:00	contact
3434	100	2020-01-21	15:09:19+00:00	contact
3436	100	2020-03-06	17:54:15+00:00	contact
3cd133cd-8b66-4997-8483-35749c4e0f7e-14				
Battery		Date Time		Device Type
23072	100	2019-07-31	13:11:24+00:00	contact
23073	100	2019-07-31	13:11:35+00:00	contact
23074	85	2019-07-31	13:11:52+00:00	contact
23075	80	2019-08-07	23:58:45+00:00	contact
23076	75	2019-08-09	20:41:25+00:00	contact
23077	70	2019-08-12	15:19:25+00:00	contact
23078	70	2019-08-28	11:03:21+00:00	contact
23079	70	2019-09-27	05:29:44+00:00	contact
23080	70	2019-11-20	12:38:43+00:00	contact
23081	70	2019-12-08	13:37:16+00:00	contact
23082	70	2019-12-19	17:12:09+00:00	contact
23083	70	2020-01-10	15:32:12+00:00	contact
23084	55	2020-02-19	09:25:47+00:00	contact
23085	55	2020-03-06	20:29:47+00:00	contact
23086	55	2020-03-10	13:11:58+00:00	contact
0c80479e-4247-47d0-bf82-9c4ac3808d09-10				
Battery		Date Time		Device Type
25671	75	2019-11-28	19:20:06+00:00	contact
afd5ca36-aeff-4ed8-b244-52e94be1fcf7-4				
Battery		Date Time		Device Type
27808	85	2020-01-12	18:04:04+00:00	contact
27809	100	2020-01-17	09:37:14+00:00	contact
27810	100	2020-01-17	09:37:26+00:00	contact
27811	60	2020-01-17	09:37:50+00:00	contact
27812	100	2020-01-17	09:46:40+00:00	contact
...
44737	0	2020-02-24	11:05:23+00:00	contact
44738	100	2020-02-24	11:37:47+00:00	contact
44739	0	2020-02-24	11:37:58+00:00	contact
44740	100	2020-02-24	12:01:24+00:00	contact
44741	0	2020-02-24	12:01:34+00:00	contact
[16934 rows x 3 columns]				
7a9ea757-c0e9-43f6-82fc-0a1ef94fd632-10				
Battery		Date Time		Device Type
25686	100	2019-12-01	10:37:49+00:00	contact
25687	75	2019-12-01	10:38:06+00:00	contact
e7badcc0-0401-45cb-b790-8dda7ed3634f-11				
Battery		Date Time		Device Type
25670	75	2019-11-28	15:45:20+00:00	contact
08f9ae80-20f3-4ed0-8b6a-748e64ad1e1c-9				
Battery		Date Time		Device Type
44831	100	2020-01-14	14:52:24+00:00	contact

44832	100	2020-01-14	14:52:35+00:00	contact
44833	55	2020-01-14	14:52:46+00:00	contact
44834	100	2020-01-14	14:53:28+00:00	contact
44836	100	2020-01-17	12:43:04+00:00	contact

ae29be44-deb9-496a-9785-bef150daaf71-10

	Battery		Date Time	Device Type
2763	85	2019-05-16	16:16:30+00:00	contact
2764	85	2019-06-01	07:30:55+00:00	contact
2765	85	2019-06-01	14:24:12+00:00	contact
2766	85	2019-07-02	13:29:47+00:00	contact
2767	85	2019-07-11	09:39:51+00:00	contact
2768	85	2019-07-11	15:39:51+00:00	contact
2769	85	2019-07-25	21:42:59+00:00	contact
2770	85	2019-08-07	11:23:16+00:00	contact
2771	85	2019-08-28	09:16:23+00:00	contact
2772	85	2019-09-26	15:46:22+00:00	contact
2773	85	2019-10-24	20:16:18+00:00	contact
2774	80	2019-10-28	07:31:57+00:00	contact
2775	75	2019-11-09	08:57:12+00:00	contact
2776	70	2019-11-12	03:12:54+00:00	contact
2777	70	2019-11-15	15:15:08+00:00	contact
2778	70	2019-11-15	15:15:08+00:00	contact
2779	70	2019-11-20	14:42:18+00:00	contact
2780	70	2019-11-24	09:57:53+00:00	contact
2781	70	2019-11-24	09:57:54+00:00	contact
2782	60	2019-11-30	03:02:46+00:00	contact
2783	55	2019-12-01	01:30:23+00:00	contact
2784	50	2019-12-12	07:01:11+00:00	contact
2785	50	2019-12-19	17:46:28+00:00	contact
2786	45	2020-01-10	05:50:00+00:00	contact

93a84422-3f35-417a-ab81-769ee1aab19b-18

	Battery		Date Time	Device Type
1195	80	2019-08-09	16:31:53+00:00	contact
1196	80	2019-08-28	07:49:46+00:00	contact
1197	80	2019-09-26	20:16:07+00:00	contact
1198	80	2019-10-21	18:45:39+00:00	contact
1199	80	2019-11-14	16:35:31+00:00	contact
1200	80	2019-11-20	15:32:53+00:00	contact
1201	80	2019-12-23	03:32:37+00:00	contact
1202	80	2020-01-10	16:41:35+00:00	contact
1203	75	2020-01-13	00:11:26+00:00	contact
1204	75	2020-01-13	13:16:22+00:00	contact
1205	70	2020-01-16	14:03:54+00:00	contact
1206	60	2020-02-07	10:36:28+00:00	contact
1207	60	2020-03-06	13:26:24+00:00	contact
1208	60	2020-03-09	15:43:47+00:00	contact
1209	60	2020-03-10	14:38:36+00:00	contact

04953915-5e91-4ddb-812b-76e9ee8fe432-2

	Battery	Date Time	Device Type
45228	92	2020-02-25 16:30:52+00:00	pir

b23f2567-2920-4a45-9374-5a53d583edde-11

	Battery	Date Time	Device Type
23253	100	2019-09-03 11:49:57+00:00	contact
23254	100	2019-09-03 11:50:18+00:00	contact
23255	70	2019-09-03 11:50:28+00:00	contact
23256	70	2019-09-03 17:44:40+00:00	contact
23260	70	2019-10-03 03:34:26+00:00	contact
23261	70	2019-10-03 09:10:20+00:00	contact
23262	70	2019-10-03 09:10:21+00:00	contact

539be880-112f-4fa5-b83a-d14a6279b1b9-10

	Battery	Date Time	Device Type
25663	70	2019-11-28 15:42:17+00:00	contact

6db323fa-affd-4bb9-9b04-baec81cb054-8

	Battery	Date Time	Device Type
22799	100	2019-06-19 21:46:23+00:00	contact
22800	100	2019-06-20 09:16:34+00:00	contact
22801	100	2019-07-06 03:43:46+00:00	contact
22802	100	2019-07-07 02:36:34+00:00	contact
22803	100	2019-07-09 11:54:26+00:00	contact
22804	100	2019-07-24 12:44:22+00:00	contact
22805	100	2019-07-24 14:51:10+00:00	contact
22806	100	2019-07-24 15:44:42+00:00	contact
22809	100	2019-08-20 16:22:11+00:00	contact
22811	100	2019-08-29 14:31:36+00:00	contact
22812	100	2019-08-29 14:31:49+00:00	contact
22813	100	2019-08-29 14:31:59+00:00	contact
22814	100	2019-08-29 14:32:34+00:00	contact
22815	100	2019-08-29 14:32:57+00:00	contact
22816	100	2019-08-29 14:33:02+00:00	contact
22817	100	2019-08-29 14:33:22+00:00	contact
22818	100	2019-09-18 16:10:51+00:00	contact
22820	100	2019-09-26 13:33:49+00:00	contact
22824	100	2019-10-18 14:08:45+00:00	contact
22825	100	2019-10-22 15:44:07+00:00	contact
22829	100	2019-12-11 12:32:10+00:00	contact
22830	100	2019-12-11 12:33:47+00:00	contact
22831	100	2019-12-11 12:34:03+00:00	contact
22832	100	2019-12-11 12:34:32+00:00	contact
22837	100	2019-12-11 13:01:59+00:00	contact
22838	100	2019-12-11 13:02:16+00:00	contact
22841	100	2019-12-17 20:44:56+00:00	contact
22842	100	2019-12-18 09:34:06+00:00	contact
22843	100	2020-01-09 18:56:58+00:00	contact
22844	100	2020-01-14 13:02:30+00:00	contact
22845	100	2020-01-16 14:32:59+00:00	contact
22846	100	2020-01-16 14:34:40+00:00	contact

22849	100	2020-01-16	15:35:23+00:00	contact
22850	100	2020-01-16	17:01:14+00:00	contact
22851	90	2020-01-17	15:41:41+00:00	contact
22852	85	2020-01-21	09:59:09+00:00	contact
22853	80	2020-01-22	08:32:34+00:00	contact
22854	75	2020-01-25	04:30:01+00:00	contact
22855	70	2020-01-28	00:13:25+00:00	contact
22856	65	2020-02-09	06:01:25+00:00	contact

4b9a3dd8-451f-436b-b787-d5a80c71cb00-3

	Battery		Date Time	Device Type
27681	80	2019-12-11	16:42:33+00:00	contact
27682	100	2019-12-12	14:20:11+00:00	contact
27683	100	2019-12-12	14:20:23+00:00	contact
27684	90	2019-12-12	14:20:34+00:00	contact
27685	70	2019-12-13	09:36:40+00:00	contact
27686	55	2019-12-14	04:43:08+00:00	contact
27687	55	2019-12-19	19:39:34+00:00	contact
27688	55	2020-01-10	13:12:38+00:00	contact
27689	100	2020-02-11	11:59:19+00:00	contact
27690	100	2020-03-02	18:16:27+00:00	contact
27691	90	2020-03-07	08:24:49+00:00	contact
27692	80	2020-03-09	05:01:11+00:00	contact

5fd0d896-f31e-4022-ab90-95c26837063c-8

	Battery		Date Time	Device Type
45183	90	2020-02-29	14:16:24+00:00	contact

3eb23758-8630-4855-b774-ea2a626f3ce8-9

	Battery		Date Time	Device Type
2602	70	2019-05-16	13:25:37+00:00	contact
2603	70	2019-06-01	12:34:18+00:00	contact
2604	70	2019-07-02	22:48:13+00:00	contact
2605	70	2019-07-11	22:09:14+00:00	contact
2606	70	2019-07-26	05:55:30+00:00	contact
2607	70	2019-07-26	05:55:31+00:00	contact
2608	70	2019-08-07	10:57:32+00:00	contact
2609	70	2019-08-28	12:59:45+00:00	contact
2610	70	2019-09-26	17:14:33+00:00	contact
2611	65	2019-10-18	15:50:38+00:00	contact
2612	65	2019-10-24	20:04:05+00:00	contact
2613	60	2019-10-27	04:30:29+00:00	contact
2614	50	2019-11-04	07:02:50+00:00	contact
2615	40	2019-11-09	07:11:23+00:00	contact
2616	40	2019-11-15	14:56:33+00:00	contact
2617	40	2019-11-20	13:37:37+00:00	contact
2618	40	2019-11-20	13:37:37+00:00	contact
2619	40	2019-11-20	13:37:37+00:00	contact
2620	35	2019-11-22	13:18:32+00:00	contact
2621	35	2019-11-24	08:10:31+00:00	contact
2622	30	2019-12-02	10:53:06+00:00	contact

2623	25	2019-12-04	06:59:29+00:00	contact
2624	20	2019-12-14	11:06:19+00:00	contact
2625	20	2019-12-19	17:05:48+00:00	contact
2626	0	2019-12-26	08:58:42+00:00	contact
2627	0	2020-01-07	05:46:06+00:00	contact
c17beb20-b415-4841-bc09-fca16dc50068-8				
	Battery		Date Time	Device Type
45213	0	2020-02-27	23:23:08+00:00	contact
6db323fa-affd-4bb9-9b04-baec81cb054-13				
	Battery		Date Time	Device Type
22807	100	2019-07-31	08:45:56+00:00	contact
22808	100	2019-07-31	08:46:44+00:00	contact
22810	100	2019-08-20	18:55:47+00:00	contact
22819	100	2019-09-18	18:40:38+00:00	contact
22821	100	2019-09-26	16:16:20+00:00	contact
22822	90	2019-10-16	08:22:51+00:00	contact
22823	90	2019-10-18	12:59:17+00:00	contact
22826	90	2019-10-22	20:10:57+00:00	contact
22827	100	2019-11-07	15:35:47+00:00	contact
22828	80	2019-11-07	15:36:01+00:00	contact
22833	100	2019-12-11	12:37:47+00:00	contact
22834	95	2019-12-11	12:37:57+00:00	contact
22835	100	2019-12-11	12:38:17+00:00	contact
22836	100	2019-12-11	12:38:42+00:00	contact
22839	100	2019-12-11	13:07:17+00:00	contact
22840	100	2019-12-11	13:07:39+00:00	contact
22847	100	2020-01-16	15:10:36+00:00	contact
22848	100	2020-01-16	15:10:47+00:00	contact
d0203a38-c4ec-45b7-819f-071ff53fd8cb-6				
	Battery		Date Time	Device Type
22908	100	2019-06-18	10:14:23+00:00	pir
22909	100	2019-06-18	10:14:24+00:00	pir
22910	100	2019-06-19	10:05:14+00:00	pir
22911	100	2019-06-19	16:01:21+00:00	pir
22912	100	2019-06-20	07:53:23+00:00	pir
22913	100	2019-07-06	02:52:44+00:00	pir
22914	100	2019-07-07	00:43:11+00:00	pir
22915	100	2019-07-09	12:16:47+00:00	pir
22916	100	2019-07-24	09:17:31+00:00	pir
22917	100	2019-07-24	11:16:43+00:00	pir
22918	100	2019-07-24	15:14:40+00:00	pir
22919	100	2019-08-20	13:59:43+00:00	pir
22920	100	2019-09-18	18:43:51+00:00	pir
22921	100	2019-09-26	11:26:15+00:00	pir
22922	96	2019-10-18	14:58:32+00:00	pir
22923	96	2019-10-18	14:58:33+00:00	pir
22924	96	2019-10-18	16:57:06+00:00	pir
22925	96	2019-10-22	16:10:47+00:00	pir

22926	92	2019-11-06	17:27:27+00:00	pir
22927	85	2019-11-19	11:02:51+00:00	pir
22928	77	2019-11-26	17:40:25+00:00	pir
22929	70	2019-11-28	17:14:45+00:00	pir
22930	62	2019-12-03	22:19:45+00:00	pir
22931	55	2019-12-06	23:41:16+00:00	pir
22932	51	2019-12-11	12:54:13+00:00	pir
22933	48	2019-12-11	12:54:17+00:00	pir
22934	40	2019-12-12	04:33:40+00:00	pir
22935	33	2019-12-13	02:24:31+00:00	pir
22936	0	2019-12-14	06:10:45+00:00	pir
22937	0	2019-12-15	00:00:15+00:00	pir

58ada5f7-8b3d-4a94-b28b-1a56bb95d855-11

	Battery		Date Time	Device Type
24235	70	2019-09-06	09:55:18+00:00	contact

2d558ecd-9cf6-4367-beb5-6666b3bc75eb-24

	Battery		Date Time	Device Type
3032	100	2019-08-01	10:59:50+00:00	contact
3034	95	2019-08-04	00:01:10+00:00	contact
3035	90	2019-08-06	19:55:04+00:00	contact
3036	90	2019-08-28	08:35:22+00:00	contact
3038	90	2019-09-26	14:43:27+00:00	contact
3041	90	2019-11-20	13:31:12+00:00	contact
3043	90	2019-12-19	16:58:29+00:00	contact
3045	90	2020-01-10	10:48:33+00:00	contact
3047	90	2020-03-03	15:25:00+00:00	contact
3049	90	2020-03-06	12:03:26+00:00	contact
3052	90	2020-03-10	13:07:01+00:00	contact

28bb90f9-31f8-4009-8852-752f2c1b854e-10

	Battery		Date Time	Device Type
22676	100	2019-06-19	15:59:37+00:00	contact
22679	100	2019-06-20	15:00:17+00:00	contact
22680	100	2019-06-20	15:00:42+00:00	contact
22681	100	2019-06-20	15:00:42+00:00	contact
22686	100	2019-07-06	07:51:58+00:00	contact
22687	100	2019-07-07	00:59:46+00:00	contact
22689	100	2019-07-09	15:52:09+00:00	contact
22691	100	2019-07-24	10:26:05+00:00	contact
22692	100	2019-07-24	16:10:31+00:00	contact
22713	100	2019-07-31	08:27:20+00:00	contact
22714	100	2019-07-31	08:27:20+00:00	contact
22727	100	2019-08-20	20:11:58+00:00	contact
22728	100	2019-09-18	20:38:43+00:00	contact
22730	100	2019-09-27	00:50:43+00:00	contact
22734	100	2019-10-19	00:22:11+00:00	contact
22736	100	2019-10-22	23:21:55+00:00	contact
22739	95	2019-10-28	12:30:39+00:00	contact
22743	90	2019-11-14	11:02:14+00:00	contact

22749	80	2019-12-03	10:24:41+00:00	contact
22760	65	2019-12-18	09:43:28+00:00	contact
22762	65	2019-12-18	09:50:20+00:00	contact
22763	100	2019-12-18	09:56:06+00:00	contact
22764	75	2019-12-18	09:56:18+00:00	contact
22765	100	2019-12-18	10:00:33+00:00	contact
22766	80	2019-12-18	10:00:45+00:00	contact
22767	100	2019-12-18	11:17:41+00:00	contact
22769	100	2020-01-09	17:49:15+00:00	contact
22770	100	2020-01-14	08:43:14+00:00	contact
22772	95	2020-01-28	10:09:19+00:00	contact
22773	90	2020-02-19	10:54:28+00:00	contact
08f9ae80-20f3-4ed0-8b6a-748e64ad1e1c-8				
Battery		Date Time		Device Type
44827	100	2020-01-14	14:47:37+00:00	contact
44828	100	2020-01-14	14:47:48+00:00	contact
44829	60	2020-01-14	14:47:59+00:00	contact
44830	100	2020-01-14	14:48:49+00:00	contact
44835	100	2020-01-17	12:33:04+00:00	contact
701bdebd-539c-4f4d-9608-fe2e5ead51c9-9				
Battery		Date Time		Device Type
25685	70	2019-12-01	10:35:26+00:00	contact
6530b3a5-6e57-4b55-b4de-07af3f62360a-10				
Battery		Date Time		Device Type
27605	100	2019-12-04	10:13:05+00:00	contact
27606	0	2019-12-04	10:13:24+00:00	contact
27607	100	2019-12-06	13:07:45+00:00	contact
27608	100	2019-12-06	13:07:54+00:00	contact
27609	100	2019-12-06	13:08:06+00:00	contact
27610	100	2019-12-06	13:08:06+00:00	contact
27611	75	2019-12-06	13:08:17+00:00	contact
27612	100	2019-12-06	13:08:51+00:00	contact
27613	100	2019-12-06	13:09:43+00:00	contact
27614	100	2019-12-20	01:26:54+00:00	contact
27615	100	2020-01-10	13:05:52+00:00	contact
27616	100	2020-03-06	21:45:56+00:00	contact
27617	100	2020-03-08	14:04:55+00:00	contact
27618	100	2020-03-14	20:41:59+00:00	contact
27619	100	2020-03-15	19:48:59+00:00	contact
68ebd672-6d63-4a7d-8caf-3e4663a7bf0d-11				
Battery		Date Time		Device Type
25684	70	2019-12-01	10:41:02+00:00	contact
52f231d1-a7c5-4839-9880-5d9cd9464035-4				
Battery		Date Time		Device Type
45234	90	2020-03-03	19:15:42+00:00	contact
ffc51842-cd4f-4ead-893a-9b489740839b-7				
Battery		Date Time		Device Type
23048	100	2019-07-24	14:00:55+00:00	pir

23049	100	2019-07-24	14:00:55+00:00	pir
23050	100	2019-07-24	16:00:55+00:00	pir
23051	100	2019-07-25	14:02:14+00:00	pir
23052	100	2019-07-30	18:12:53+00:00	pir
23053	100	2019-07-30	18:12:53+00:00	pir
23054	100	2019-08-27	11:08:49+00:00	pir
23055	100	2019-08-29	17:10:04+00:00	pir
23056	100	2019-09-25	10:05:41+00:00	pir
23057	100	2019-09-25	16:06:11+00:00	pir
23058	100	2019-09-26	10:07:48+00:00	pir
23059	100	2019-10-15	09:05:50+00:00	pir
23060	40	2019-10-15	09:05:51+00:00	pir

ccf2afc6-79d3-42b2-a6d3-aff38a4bdf0c-11

Battery		Date	Time	Device	Type
25701	85	2019-12-01	13:12:11+00:00	contact	

81e38c85-decb-4691-be52-44f88a8d99c4-3

Battery		Date	Time	Device	Type
22991	100	2019-07-24	13:58:43+00:00		pir
22992	100	2019-07-24	13:58:44+00:00		pir
22993	100	2019-07-24	15:58:35+00:00		pir
22994	100	2019-07-25	13:57:53+00:00		pir
22995	100	2019-07-30	17:47:50+00:00		pir
22996	100	2019-08-27	11:11:42+00:00		pir
22997	100	2019-08-29	17:06:09+00:00		pir
22998	100	2019-09-25	09:12:55+00:00		pir
22999	100	2019-09-25	15:13:04+00:00		pir
23000	100	2019-09-26	11:13:11+00:00		pir
23001	100	2019-10-15	09:07:02+00:00		pir
23002	40	2019-10-15	09:07:03+00:00		pir

c8c399da-fb19-4c69-b564-d819f8cda14f-5

Battery		Date	Time	Device	Type
23032	100	2019-07-24	14:07:58+00:00		pir
23033	100	2019-07-24	14:07:59+00:00		pir
23034	100	2019-07-24	16:06:58+00:00		pir
23035	100	2019-07-25	13:58:59+00:00		pir
23036	70	2019-07-30	18:47:55+00:00		pir
23037	70	2019-08-27	12:55:16+00:00		pir
23038	70	2019-08-29	16:23:03+00:00		pir
23039	62	2019-09-11	15:40:06+00:00		pir
23040	59	2019-09-25	09:00:10+00:00		pir
23041	59	2019-09-25	14:57:04+00:00		pir
23042	59	2019-09-26	10:47:13+00:00		pir
23043	55	2019-10-03	09:29:23+00:00		pir
23044	100	2019-10-15	09:05:34+00:00		pir
23045	100	2019-10-15	09:05:34+00:00		pir
23046	48	2019-10-15	09:05:36+00:00		pir
23047	48	2019-10-15	09:05:36+00:00		pir

c8c6fa9d-91a8-4a42-a3c4-4646d562ea71-9

	Battery		Date Time	Device Type
25649	100	2019-11-28	12:28:19+00:00	contact
25650	95	2019-11-28	12:28:39+00:00	contact

9a904a56-15ae-4819-bb7f-3b14108f4b8b-9

	Battery		Date Time	Device Type
25863	100	2019-11-26	14:13:42+00:00	contact
25864	100	2019-11-26	14:13:53+00:00	contact
25865	95	2019-11-26	14:14:05+00:00	contact
25866	95	2019-11-26	14:14:56+00:00	contact
25867	90	2019-11-28	15:16:52+00:00	contact
25868	80	2019-12-01	05:13:30+00:00	contact
25869	75	2019-12-08	01:13:15+00:00	contact
25871	75	2019-12-19	17:53:18+00:00	contact
25873	75	2020-01-10	14:50:52+00:00	contact
25875	75	2020-02-15	22:58:11+00:00	contact
25876	70	2020-03-03	15:46:39+00:00	contact
25878	70	2020-03-06	16:04:24+00:00	contact
25879	70	2020-03-13	20:37:23+00:00	contact
25882	70	2020-03-17	18:09:15+00:00	contact

0c2b973e-86de-44ef-96d3-d3b378660dbf-9

	Battery		Date Time	Device Type
25763	100	2019-11-25	15:54:23+00:00	contact
25764	100	2019-11-25	15:54:35+00:00	contact
25765	80	2019-11-25	15:54:46+00:00	contact
25768	70	2019-12-01	20:05:13+00:00	contact
25772	70	2019-12-04	21:20:12+00:00	contact
25774	70	2019-12-19	16:59:25+00:00	contact
25775	70	2020-01-10	13:11:26+00:00	contact
25778	70	2020-03-06	15:45:17+00:00	contact

7f647399-0466-4212-b75a-aa2fa4263975-8

	Battery		Date Time	Device Type
25920	100	2019-11-29	12:27:55+00:00	contact
25921	100	2019-11-29	12:28:07+00:00	contact
25922	70	2019-11-29	12:28:18+00:00	contact
25923	65	2019-12-02	02:47:36+00:00	contact
25924	55	2019-12-02	23:58:57+00:00	contact

0c2b973e-86de-44ef-96d3-d3b378660dbf-8

	Battery		Date Time	Device Type
25760	100	2019-11-25	15:51:12+00:00	contact
25761	100	2019-11-25	15:51:23+00:00	contact
25762	95	2019-11-25	15:51:35+00:00	contact
25766	85	2019-11-28	12:30:38+00:00	contact
25767	80	2019-12-01	05:14:19+00:00	contact
25769	75	2019-12-02	02:26:47+00:00	contact
25770	70	2019-12-02	23:43:56+00:00	contact
25771	70	2019-12-04	16:41:49+00:00	contact
25773	70	2019-12-19	14:44:09+00:00	contact
25776	70	2020-01-10	13:38:02+00:00	contact

25777 70 2020-03-06 13:37:15+00:00 contact
f5ea47e5-b25b-47ae-b730-1b36bf594909-9

	Battery		Date Time	Device Type
44809	100	2020-01-14	10:31:34+00:00	contact
44810	100	2020-01-14	10:31:45+00:00	contact
44811	75	2020-01-14	10:31:57+00:00	contact
44812	100	2020-01-14	10:35:15+00:00	contact
44813	100	2020-01-14	10:40:51+00:00	contact
44816	100	2020-01-15	04:27:49+00:00	contact
44818	100	2020-01-15	10:23:51+00:00	contact
44821	100	2020-01-17	15:22:58+00:00	contact
44825	100	2020-03-06	17:55:10+00:00	contact

16848137-ab40-43bf-ae38-ae3ec3350e39-11

	Battery		Date Time	Device Type
23292	60	2019-09-07	07:43:00+00:00	contact
23294	60	2019-09-23	17:22:14+00:00	contact
23295	60	2019-09-25	14:31:00+00:00	contact
23297	60	2019-09-25	21:02:10+00:00	contact
23299	60	2019-09-26	14:14:18+00:00	contact
23301	60	2019-10-22	21:16:30+00:00	contact
23303	60	2019-11-20	14:05:25+00:00	contact
23305	60	2019-11-25	19:14:50+00:00	contact

e281604e-7858-4dee-8329-cbb49a40eb0a-13

	Battery		Date Time	Device Type
23271	100	2019-09-03	12:12:00+00:00	contact
23272	70	2019-09-03	12:12:16+00:00	contact
23273	70	2019-09-03	18:25:54+00:00	contact
23274	70	2019-10-02	12:18:00+00:00	contact

76f8ed63-a93f-41fc-a9b8-bd5dde532295-3

	Battery		Date Time	Device Type
45235	77	2020-03-03	19:13:47+00:00	pir

5f7f8471-1ee4-4e7b-812d-2b9c4b84f645-6

	Battery		Date Time	Device Type
22976	100	2019-07-24	13:14:55+00:00	pir
22977	100	2019-07-24	13:14:55+00:00	pir
22978	100	2019-07-24	13:48:03+00:00	pir
22979	96	2019-07-24	13:48:04+00:00	pir
22980	96	2019-07-24	13:48:04+00:00	pir

18514e09-2f98-4ac6-af6e-b8ded6e71d3c-20

	Battery		Date Time	Device Type
3447	100	2019-05-16	14:36:18+00:00	contact
3448	100	2019-07-10	17:47:15+00:00	contact
3449	100	2019-07-25	14:17:57+00:00	contact
3450	100	2019-08-01	17:03:10+00:00	contact
3451	100	2019-08-19	12:23:24+00:00	contact
3452	100	2019-08-20	18:15:28+00:00	contact
3453	100	2019-08-28	10:41:57+00:00	contact
3454	100	2019-09-12	18:34:52+00:00	contact

3455	100	2019-09-26	13:53:59+00:00	contact
3456	100	2019-10-02	15:39:30+00:00	contact
3457	100	2019-11-01	19:11:08+00:00	contact
3458	100	2019-11-20	14:43:04+00:00	contact
3459	95	2019-11-25	07:52:24+00:00	contact
3460	90	2019-12-15	06:43:26+00:00	contact
3461	90	2019-12-19	18:27:15+00:00	contact
3462	90	2019-12-22	04:31:36+00:00	contact
3463	85	2020-01-04	13:53:18+00:00	contact
3464	85	2020-01-10	11:14:40+00:00	contact
3465	80	2020-01-10	17:22:59+00:00	contact
3466	75	2020-01-19	16:22:53+00:00	contact
3467	75	2020-01-21	15:07:43+00:00	contact
3468	100	2020-01-21	15:16:14+00:00	contact
3469	100	2020-03-06	18:52:49+00:00	contact
7425cbc6-fdcd-4a20-8503-6f2758dabea9-8				
Battery		Date Time	Device Type	
25597	90	2019-11-21	22:48:01+00:00	contact
e547568d-1853-45b0-bdf1-3417342700bf-12				
Battery		Date Time	Device Type	
27795	100	2020-01-06	17:59:41+00:00	contact
27796	75	2020-01-06	18:00:00+00:00	contact
0f181d71-ed63-47f0-9cda-6a9eca433610-18				
Battery		Date Time	Device Type	
3406	100	2019-05-16	15:01:35+00:00	contact
3407	100	2019-07-10	18:48:39+00:00	contact
3408	100	2019-07-25	14:15:29+00:00	contact
3409	100	2019-08-01	14:30:25+00:00	contact
3410	100	2019-08-19	13:27:49+00:00	contact
3411	100	2019-08-20	18:43:52+00:00	contact
3412	100	2019-08-28	12:34:51+00:00	contact
3413	100	2019-09-12	18:46:42+00:00	contact
3414	100	2019-09-26	13:52:45+00:00	contact
3415	100	2019-10-02	14:18:15+00:00	contact
3418	100	2019-11-01	17:19:30+00:00	contact
3421	100	2019-11-20	16:07:46+00:00	contact
3423	100	2019-12-19	16:00:38+00:00	contact
3425	100	2019-12-22	01:20:48+00:00	contact
3426	90	2020-01-09	09:53:50+00:00	contact
3428	90	2020-01-10	14:49:19+00:00	contact
3429	90	2020-01-19	16:44:42+00:00	contact
3431	90	2020-01-21	14:58:17+00:00	contact
3435	90	2020-03-06	17:17:21+00:00	contact
58ada5f7-8b3d-4a94-b28b-1a56bb95d855-9				
Battery		Date Time	Device Type	
23338	100	2019-09-03	17:15:22+00:00	contact
23339	100	2019-09-03	17:15:33+00:00	contact
23340	70	2019-09-03	17:15:55+00:00	contact

23341	100	2019-09-03	17:19:56+00:00	contact
23342	70	2019-09-03	17:20:21+00:00	contact
...
25202	100	2019-09-09	09:53:47+00:00	contact
25203	100	2019-09-09	09:58:16+00:00	contact
25204	100	2019-09-09	10:02:45+00:00	contact
25205	100	2019-09-09	10:07:16+00:00	contact
25206	100	2019-09-09	10:11:46+00:00	contact

[1868 rows x 3 columns]

9a904a56-15ae-4819-bb7f-3b14108f4b8b-8

	Battery		Date Time	Device Type
25860	100	2019-11-26	14:10:16+00:00	contact
25861	100	2019-11-26	14:10:27+00:00	contact
25862	95	2019-11-26	14:10:38+00:00	contact
25870	95	2019-12-19	16:33:32+00:00	contact
25872	95	2020-01-10	13:24:15+00:00	contact
25874	95	2020-02-15	21:47:06+00:00	contact
25877	95	2020-03-06	15:31:34+00:00	contact
25880	95	2020-03-13	22:52:23+00:00	contact
25881	95	2020-03-17	15:54:22+00:00	contact

76730458-b978-4e99-ade0-57bdcc5a9d93-9

	Battery		Date Time	Device Type
25668	100	2019-11-28	15:39:41+00:00	contact
25669	80	2019-11-28	15:39:54+00:00	contact

a9cbfc2b-babb-4ea2-8e42-34e99951d8ad-4

	Battery		Date Time	Device Type
44881	100	2020-01-31	11:16:21+00:00	contact
44882	100	2020-01-31	11:17:13+00:00	contact
44883	100	2020-01-31	11:17:13+00:00	contact
44884	90	2020-01-31	11:17:37+00:00	contact
44885	100	2020-01-31	15:19:17+00:00	contact
44886	90	2020-01-31	15:19:31+00:00	contact
44887	80	2020-02-01	12:39:39+00:00	contact
44888	75	2020-02-02	10:45:47+00:00	contact
44889	100	2020-02-06	14:17:55+00:00	contact
44890	90	2020-02-06	14:18:06+00:00	contact
44891	85	2020-02-09	07:08:35+00:00	contact
44892	80	2020-02-10	05:30:15+00:00	contact
44893	75	2020-02-11	02:41:12+00:00	contact
44894	75	2020-03-02	15:57:43+00:00	contact
44895	100	2020-03-16	14:10:20+00:00	contact
44896	100	2020-03-16	14:10:29+00:00	contact
44897	95	2020-03-16	14:10:43+00:00	contact
44898	100	2020-03-19	16:08:55+00:00	contact
44899	45	2020-03-19	16:09:09+00:00	contact

11a06ff6-0a70-45ba-9085-08344ef9372f-10

	Battery		Date Time	Device Type
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44752	100	2020-01-14	10:03:30+00:00	contact
44753	100	2020-01-14	10:03:41+00:00	contact
44754	70	2020-01-14	10:03:53+00:00	contact
44755	100	2020-01-14	10:05:03+00:00	contact
44756	100	2020-01-15	03:38:55+00:00	contact
44757	100	2020-01-15	09:26:19+00:00	contact
44758	100	2020-01-17	13:06:08+00:00	contact
44759	100	2020-03-06	15:30:32+00:00	contact

1d0d8fa6-33ce-4344-8f7e-2d18f6a9a773-7

	Battery		Date Time	Device Type
25438	100	2019-10-15	10:04:35+00:00	pir
25439	44	2019-10-15	10:05:22+00:00	pir
25440	44	2019-10-15	10:57:10+00:00	pir
25441	100	2019-10-15	10:57:19+00:00	pir
25442	48	2019-10-15	10:57:19+00:00	pir
25443	40	2019-10-18	04:57:33+00:00	pir
25444	100	2019-12-11	13:04:09+00:00	pir
25445	100	2019-12-11	13:05:07+00:00	pir
25446	100	2019-12-11	13:05:09+00:00	pir
25447	100	2019-12-11	13:05:55+00:00	pir
25448	100	2019-12-11	13:06:27+00:00	pir

9e1b8034-1d93-4518-960b-3e680a660746-4

	Battery		Date Time	Device Type
44928	100	2020-02-05	21:20:23+00:00	contact
44929	90	2020-02-05	21:20:35+00:00	contact
44930	90	2020-02-05	21:20:49+00:00	contact
44931	100	2020-02-06	15:42:31+00:00	contact
44932	100	2020-02-06	15:42:42+00:00	contact
44933	90	2020-02-06	15:42:53+00:00	contact

8a4a86f1-8efa-4b68-a1ba-7d93fef0e751-4

	Battery		Date Time	Device Type
45222	100	2020-02-27	10:24:52+00:00	contact
45223	100	2020-02-27	10:25:03+00:00	contact
45224	55	2020-02-27	10:25:14+00:00	contact
45225	20	2020-02-28	05:31:39+00:00	contact
45226	0	2020-03-01	19:38:02+00:00	contact
45227	0	2020-03-02	15:40:19+00:00	contact

4b3440ab-b217-4156-a2a3-8b1d10ac9288-12

	Battery		Date Time	Device Type
23221	100	2019-09-03	12:03:34+00:00	contact
23222	100	2019-09-03	12:03:34+00:00	contact
23223	100	2019-09-03	12:03:45+00:00	contact
23224	90	2019-09-03	23:27:14+00:00	contact
23225	75	2019-09-05	08:04:18+00:00	contact
23226	70	2019-09-07	04:48:32+00:00	contact
23227	70	2019-10-02	21:35:33+00:00	contact
23228	70	2019-10-02	21:35:33+00:00	contact
23229	70	2019-10-02	21:35:33+00:00	contact

83938043-e29e-4521-8f49-5bbf05ffbc9a-18

	Battery	Date	Time	Device	Type
3137	100	2019-05-16	21:29:38+00:00		contact
3138	100	2019-07-11	11:38:24+00:00		contact
3139	100	2019-07-24	17:28:11+00:00		contact
3140	100	2019-07-25	10:53:57+00:00		contact
3141	100	2019-08-28	13:18:12+00:00		contact
3142	100	2019-09-26	17:45:44+00:00		contact
3143	95	2019-11-19	07:07:06+00:00		contact
3144	95	2019-11-20	14:37:39+00:00		contact
3145	100	2019-12-19	13:13:54+00:00		contact
3146	75	2019-12-19	13:14:08+00:00		contact
3147	100	2019-12-19	13:24:05+00:00		contact
3148	90	2019-12-19	13:24:17+00:00		contact
3149	100	2019-12-19	13:25:50+00:00		contact
3150	75	2019-12-19	13:26:04+00:00		contact
3151	100	2019-12-19	13:37:39+00:00		contact
3152	90	2019-12-19	13:37:51+00:00		contact
3153	100	2019-12-19	13:44:22+00:00		contact
3154	100	2019-12-19	19:48:20+00:00		contact
3155	100	2019-12-19	19:48:31+00:00		contact
3156	95	2019-12-19	19:48:42+00:00		contact
3157	80	2019-12-20	18:15:35+00:00		contact
3158	100	2019-12-21	03:04:08+00:00		contact
3159	90	2019-12-22	01:42:47+00:00		contact
3160	100	2019-12-25	09:31:22+00:00		contact
3161	90	2019-12-26	08:09:55+00:00		contact
3162	100	2020-01-10	12:05:58+00:00		contact
3163	100	2020-01-10	12:06:10+00:00		contact
3164	100	2020-01-28	13:46:56+00:00		contact
3165	100	2020-01-28	13:46:59+00:00		contact
3166	100	2020-01-28	13:48:31+00:00		contact
3167	100	2020-01-28	13:48:32+00:00		contact
3168	80	2020-01-28	13:49:02+00:00		contact
3169	55	2020-01-29	10:02:09+00:00		contact
3170	100	2020-02-04	06:17:24+00:00		contact
3171	70	2020-02-04	06:17:35+00:00		contact
3172	60	2020-02-05	04:23:44+00:00		contact
3173	100	2020-02-05	06:19:05+00:00		contact
3174	75	2020-02-05	06:19:16+00:00		contact
3175	100	2020-02-06	03:37:24+00:00		contact
3176	75	2020-02-06	03:37:35+00:00		contact
3177	100	2020-02-06	08:36:42+00:00		contact
3178	80	2020-02-06	08:36:53+00:00		contact
3179	75	2020-02-07	06:57:46+00:00		contact
3180	75	2020-03-03	18:19:38+00:00		contact
3181	75	2020-03-06	13:44:54+00:00		contact
3182	75	2020-03-10	13:34:01+00:00		contact

e94c6ba2-da0d-41a4-a504-528a42263717-9

	Battery		Date Time	Device Type
25704	90	2019-12-01	13:08:32+00:00	contact

5fa1db25-0f05-4c98-9b6e-fdad4ffe69e2-9

	Battery		Date Time	Device Type
25612	100	2019-11-21	19:37:18+00:00	contact
25613	95	2019-11-21	19:37:36+00:00	contact

28bb90f9-31f8-4009-8852-752f2c1b854e-7

	Battery		Date Time	Device Type
22677	100	2019-06-19	15:59:55+00:00	contact
22678	100	2019-06-20	03:53:38+00:00	contact
22682	100	2019-06-22	00:24:21+00:00	contact
22683	100	2019-06-22	00:24:21+00:00	contact
22684	100	2019-06-22	00:24:21+00:00	contact

	Battery		Date Time	Device Type
22758	100	2019-12-11	15:15:10+00:00	contact
22759	100	2019-12-17	18:02:59+00:00	contact
22761	100	2019-12-18	09:46:53+00:00	contact
22768	100	2020-01-09	16:18:05+00:00	contact
22771	100	2020-01-14	11:14:55+00:00	contact

[68 rows x 3 columns]

d4427a26-93fe-4cd0-bb8e-7228fa903158-10

	Battery		Date Time	Device Type
25623	95	2019-11-21	19:43:21+00:00	contact

a05deb76-3700-404f-b362-d07ae77ef706-4

	Battery		Date Time	Device Type
45233	60	2020-03-03	17:41:45+00:00	contact

f26e17c2-6ac4-4f97-8526-9e3dd6b83570-3

	Battery		Date Time	Device Type
25563	100	2019-10-15	09:52:43+00:00	pir
25564	100	2019-10-15	09:52:45+00:00	pir
25565	48	2019-10-15	09:53:20+00:00	pir
25566	100	2019-10-15	10:47:56+00:00	pir
25567	100	2019-10-15	10:47:57+00:00	pir
25568	100	2019-10-15	12:47:09+00:00	pir
25569	100	2019-10-18	10:18:43+00:00	pir
25570	100	2019-10-18	14:17:06+00:00	pir
25571	100	2019-10-22	17:42:26+00:00	pir
25572	100	2019-10-24	03:29:35+00:00	pir
25573	100	2019-10-24	11:25:58+00:00	pir
25574	100	2019-10-24	13:24:56+00:00	pir
25575	100	2019-10-24	15:23:50+00:00	pir
25576	100	2019-10-24	17:22:46+00:00	pir
25577	100	2019-11-25	16:03:19+00:00	pir
25578	92	2019-12-10	13:46:23+00:00	pir
25579	88	2019-12-11	11:57:44+00:00	pir
25580	85	2019-12-11	11:58:51+00:00	pir

25581	85	2019-12-11	11:59:49+00:00	pir
25582	85	2019-12-11	12:02:08+00:00	pir
25583	100	2019-12-11	13:10:25+00:00	pir
25584	100	2019-12-11	13:10:25+00:00	pir
25585	92	2019-12-11	13:10:37+00:00	pir
25586	92	2019-12-17	18:08:21+00:00	pir
25587	88	2020-01-09	16:04:04+00:00	pir
25588	85	2020-01-16	18:38:53+00:00	pir
25589	77	2020-02-11	13:34:26+00:00	pir
60d1ce9f-464c-4331-88b2-f8e74a1d2d7f-10				
Battery		Date Time		Device Type
25744	100	2019-12-02	11:56:08+00:00	contact
25745	95	2019-12-02	11:56:26+00:00	contact
c13c08df-1e2f-46f3-ac7f-4416d3edb5a4-8				
Battery		Date Time		Device Type
25677	75	2019-11-28	19:15:44+00:00	contact
e94c6ba2-da0d-41a4-a504-528a42263717-8				
Battery		Date Time		Device Type
25702	100	2019-12-01	13:03:27+00:00	contact
25703	90	2019-12-01	13:03:49+00:00	contact
d8e1ee65-15a6-4b7d-afe4-9a188a237fc1-5				
Battery		Date Time		Device Type
27702	75	2019-12-12	14:26:41+00:00	contact
27703	100	2019-12-12	14:55:38+00:00	contact
27704	90	2019-12-12	14:55:57+00:00	contact
27705	70	2019-12-13	08:40:36+00:00	contact
27706	70	2019-12-13	08:40:36+00:00	contact
27707	70	2019-12-24	23:06:08+00:00	contact
27708	70	2019-12-24	23:06:08+00:00	contact
27709	70	2020-01-15	12:59:40+00:00	contact
acb492cb-478a-4229-b088-b631879c1c6e-11				
Battery		Date Time		Device Type
25647	100	2019-11-28	12:33:15+00:00	contact
25648	75	2019-11-28	12:33:35+00:00	contact
44058b90-d191-4f93-b623-42d84f760df9-10				
Battery		Date Time		Device Type
44845	100	2020-01-14	14:26:02+00:00	contact
44846	100	2020-01-14	14:26:13+00:00	contact
44847	50	2020-01-14	14:26:24+00:00	contact
44848	100	2020-01-14	14:27:34+00:00	contact
44849	100	2020-01-14	14:28:30+00:00	contact
44850	100	2020-01-14	14:41:55+00:00	contact
44851	100	2020-01-14	14:43:32+00:00	contact
44852	100	2020-01-17	11:37:18+00:00	contact
16848137-ab40-43bf-ae38-ae3ec3350e39-7				
Battery		Date Time		Device Type
23285	100	2019-09-03	16:58:59+00:00	contact
23286	100	2019-09-03	16:59:10+00:00	contact

23287	70	2019-09-03	16:59:24+00:00	contact
23288	70	2019-09-03	22:45:03+00:00	contact
23289	65	2019-09-05	11:50:12+00:00	contact
23290	55	2019-09-06	09:27:00+00:00	contact
23291	45	2019-09-07	07:12:50+00:00	contact
23293	45	2019-09-23	10:19:22+00:00	contact
23296	45	2019-09-25	19:36:38+00:00	contact
23298	45	2019-09-26	12:48:45+00:00	contact
23300	45	2019-10-22	19:22:31+00:00	contact
23302	45	2019-11-20	13:04:07+00:00	contact
23304	45	2019-11-25	18:32:22+00:00	contact
1e68b388-dcfa-414a-9573-652bb790aa83-10				
Battery		Date Time Device Type		
25691	100	2019-12-01	13:09:59+00:00	contact
25692	55	2019-12-01	13:10:18+00:00	contact
8ca64285-06e0-4f4c-8c15-c7e60d350e27-10				
Battery		Date Time Device Type		
25636	100	2019-11-22	11:00:39+00:00	contact
25637	80	2019-11-22	11:01:06+00:00	contact
b0a44ea1-0299-4098-8223-eaa3ac07b33c-19				
Battery		Date Time Device Type		
1246	70	2019-08-09	20:26:58+00:00	contact
1247	70	2019-08-28	12:41:54+00:00	contact
1248	70	2019-08-28	12:41:54+00:00	contact
1249	70	2019-09-26	17:46:33+00:00	contact
1250	70	2019-10-21	16:57:20+00:00	contact
1251	70	2019-11-14	17:33:06+00:00	contact
1252	70	2019-11-20	15:56:54+00:00	contact
1253	70	2019-12-20	02:05:30+00:00	contact
1254	70	2020-01-10	22:15:07+00:00	contact
1255	100	2020-01-12	16:34:03+00:00	contact
1256	95	2020-01-12	16:34:08+00:00	contact
1257	95	2020-01-13	09:45:36+00:00	contact
1258	95	2020-03-06	16:16:35+00:00	contact
1259	95	2020-03-09	13:21:51+00:00	contact
1260	95	2020-03-10	12:26:03+00:00	contact
1833977f-1169-4a4c-a366-7ae9a12756b2-8				
Battery		Date Time Device Type		
27661	90	2019-12-04	12:41:20+00:00	contact
bfcff6fe-4295-453b-96fe-cbd1ce531f0f-9				
Battery		Date Time Device Type		
27794	80	2020-01-06	17:53:19+00:00	contact
e2fe177f-7d47-4ce8-bae4-f8083e443d7a-9				
Battery		Date Time Device Type		
25751	100	2019-12-02	11:54:16+00:00	contact
25752	80	2019-12-02	11:54:31+00:00	contact
57bc8f68-fd59-46a2-9a52-f1ab3b2d810f-19				
Battery		Date Time Device Type		

3538	100	2019-05-16	13:18:47+00:00	contact
3539	100	2019-07-10	20:31:07+00:00	contact
3540	100	2019-07-25	15:23:54+00:00	contact
3541	100	2019-08-01	16:22:32+00:00	contact
3542	100	2019-08-19	15:41:15+00:00	contact
3543	100	2019-08-20	15:21:22+00:00	contact
3544	100	2019-08-20	21:10:50+00:00	contact
3545	100	2019-08-28	12:39:05+00:00	contact
3546	100	2019-09-12	18:17:58+00:00	contact
3547	100	2019-09-26	17:44:42+00:00	contact
3548	100	2019-10-02	12:47:57+00:00	contact
3549	100	2019-11-01	19:54:43+00:00	contact
3550	100	2019-11-20	14:08:15+00:00	contact
3551	95	2019-12-16	10:47:36+00:00	contact
3552	95	2019-12-19	16:45:12+00:00	contact
3553	95	2019-12-22	02:50:44+00:00	contact
3554	95	2020-01-10	13:37:36+00:00	contact
3555	90	2020-01-14	08:57:26+00:00	contact
3556	90	2020-01-19	18:20:33+00:00	contact
3557	100	2020-01-21	15:08:13+00:00	contact
3558	100	2020-01-21	15:08:25+00:00	contact
3559	100	2020-03-06	16:55:41+00:00	contact

e843876d-30ff-404c-b53c-827a9d07e62a-11

	Battery		Date Time	Device Type
44791	100	2020-01-14	10:45:30+00:00	contact
44792	100	2020-01-14	10:45:41+00:00	contact
44793	80	2020-01-14	10:45:53+00:00	contact
44794	80	2020-01-15	04:07:28+00:00	contact
44795	70	2020-01-15	05:11:53+00:00	contact
44796	70	2020-01-15	09:46:00+00:00	contact
44797	70	2020-01-17	13:29:48+00:00	contact
44798	70	2020-03-06	16:11:37+00:00	contact

65471317-bad9-4245-a085-6dd9a3a98d5d-7

	Battery		Date Time	Device Type
45018	100	2020-02-12	12:29:35+00:00	contact
45019	100	2020-02-12	12:29:35+00:00	contact
45020	95	2020-02-12	12:30:20+00:00	contact
45021	100	2020-02-12	12:50:14+00:00	contact
45022	90	2020-02-12	12:50:25+00:00	contact
45023	90	2020-02-12	18:36:28+00:00	contact
45024	90	2020-02-12	18:36:39+00:00	contact
45025	90	2020-02-13	00:25:55+00:00	contact
45026	90	2020-02-13	17:24:38+00:00	contact
45027	90	2020-02-13	23:14:47+00:00	contact
45028	90	2020-02-14	16:08:23+00:00	contact
45029	90	2020-02-14	21:46:22+00:00	contact
45030	90	2020-02-15	14:40:16+00:00	contact
45031	90	2020-02-15	20:17:57+00:00	contact

45032	90	2020-02-16	16:25:55+00:00	contact
45033	90	2020-02-16	22:03:11+00:00	contact
45034	90	2020-02-17	14:54:24+00:00	contact
45035	90	2020-02-17	20:31:56+00:00	contact
45036	90	2020-02-18	18:59:16+00:00	contact
45037	90	2020-02-19	00:36:19+00:00	contact
45038	90	2020-02-19	17:26:37+00:00	contact
45039	90	2020-02-19	23:03:46+00:00	contact
45040	90	2020-02-20	15:54:57+00:00	contact
45041	90	2020-02-20	21:32:10+00:00	contact
45042	85	2020-02-21	08:29:31+00:00	contact
45043	85	2020-02-21	14:22:26+00:00	contact
45044	85	2020-02-21	19:59:31+00:00	contact
45045	85	2020-02-22	18:25:44+00:00	contact
45046	85	2020-02-23	00:00:00+00:00	contact
45047	75	2020-02-23	05:17:56+00:00	contact
45048	75	2020-02-23	05:17:56+00:00	contact
45049	75	2020-02-23	16:44:11+00:00	contact
45050	75	2020-02-23	22:19:13+00:00	contact
45051	75	2020-02-24	15:04:15+00:00	contact

f16cacdf-b78b-4bcf-a4f4-b6b217218eb3-4

	Battery		Date Time	Device Type
44922	90	2020-01-24	17:24:20+00:00	contact
44923	100	2020-01-27	14:02:35+00:00	contact
44924	100	2020-01-27	14:02:46+00:00	contact
44925	90	2020-01-27	14:03:00+00:00	contact
44926	90	2020-03-02	18:10:29+00:00	contact
44927	90	2020-03-05	15:17:40+00:00	contact

7af44ced-01a9-494e-8945-49b740537ed5-11

	Battery		Date Time	Device Type
25676	70	2019-11-28	19:22:08+00:00	contact

34eb6cc0-86de-487f-9854-8e080c7f7991-7

	Battery		Date Time	Device Type
27737	100	2020-01-03	14:33:34+00:00	contact
27738	100	2020-01-03	14:33:45+00:00	contact
27739	85	2020-01-03	14:33:57+00:00	contact
27740	100	2020-01-03	14:34:17+00:00	contact
27747	100	2020-01-10	14:18:45+00:00	contact
27749	100	2020-01-29	12:21:15+00:00	contact
27752	100	2020-03-09	12:53:10+00:00	contact
27754	100	2020-03-10	12:50:19+00:00	contact

16eebdee-3ca0-4c2f-a041-930fdd32625a-4

	Battery		Date Time	Device Type
25418	40	2019-10-15	10:00:23+00:00	pir
25419	100	2019-10-15	10:51:47+00:00	pir
25420	100	2019-10-15	10:51:48+00:00	pir
25421	100	2019-10-15	12:51:56+00:00	pir
25422	100	2019-10-18	10:57:27+00:00	pir

25423	100	2019-10-18	12:57:35+00:00	pir
25424	100	2019-10-22	17:05:23+00:00	pir
25425	100	2019-10-24	03:07:32+00:00	pir
25426	100	2019-10-24	11:07:52+00:00	pir
25427	100	2019-10-24	13:07:53+00:00	pir
25428	100	2019-10-24	15:07:57+00:00	pir
25429	100	2019-10-24	17:08:08+00:00	pir
25430	100	2019-10-24	17:08:08+00:00	pir
25431	100	2019-11-25	14:59:04+00:00	pir
25432	100	2019-11-25	16:59:04+00:00	pir
25433	100	2019-12-11	12:17:50+00:00	pir
25434	100	2019-12-11	12:24:22+00:00	pir
25435	100	2019-12-17	16:40:42+00:00	pir
25436	100	2019-12-17	18:40:55+00:00	pir
25437	100	2020-01-09	17:41:57+00:00	pir

0cf8d699-69af-4926-83ba-244e78454a53-24

	Battery		Date Time	Device Type
3396	55	2019-10-02	09:24:16+00:00	contact

f5ea47e5-b25b-47ae-b730-1b36bf594909-8

	Battery		Date Time	Device Type
44806	100	2020-01-14	10:26:19+00:00	contact
44807	100	2020-01-14	10:26:30+00:00	contact
44808	90	2020-01-14	10:26:42+00:00	contact
44814	80	2020-01-14	16:58:28+00:00	contact
44815	80	2020-01-15	03:44:32+00:00	contact
44817	80	2020-01-15	09:27:21+00:00	contact
44819	75	2020-01-16	13:43:43+00:00	contact
44820	75	2020-01-17	12:50:18+00:00	contact
44822	70	2020-01-17	17:00:09+00:00	contact
44823	65	2020-01-18	10:00:07+00:00	contact
44824	60	2020-01-20	03:23:36+00:00	contact
44826	60	2020-03-06	18:31:56+00:00	contact

11e8f620-357a-459c-bda9-28f6fe7299fc-9

	Battery		Date Time	Device Type
25952	100	2019-12-04	10:11:18+00:00	contact
25953	75	2019-12-04	10:11:38+00:00	contact
25957	100	2019-12-06	12:58:06+00:00	contact
25958	100	2019-12-06	12:58:17+00:00	contact
25959	80	2019-12-06	12:58:51+00:00	contact

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27556	100	2019-12-11	10:43:24+00:00	contact
27557	100	2019-12-11	10:47:55+00:00	contact
27558	100	2019-12-11	10:52:59+00:00	contact
27559	100	2019-12-11	10:57:20+00:00	contact
27560	100	2019-12-11	10:57:20+00:00	contact

[1603 rows x 3 columns]

9122ad6c-861f-46ea-8b7d-a6705ac129a9-21

	Battery	Date	Time	Device	Type
3602	100	2019-05-16	15:03:23+00:00	contact	
3603	100	2019-07-10	17:01:15+00:00	contact	
3604	100	2019-07-17	16:56:26+00:00	contact	
3605	100	2019-07-20	08:08:09+00:00	contact	
3606	80	2019-07-20	08:08:20+00:00	contact	
3607	80	2019-07-25	14:20:50+00:00	contact	
3608	100	2019-09-03	08:54:25+00:00	contact	
3609	100	2019-09-03	08:54:36+00:00	contact	
3610	100	2019-09-12	18:06:38+00:00	contact	
3611	100	2019-09-26	18:32:33+00:00	contact	
3612	100	2019-10-02	13:01:21+00:00	contact	
3613	100	2019-11-01	18:29:54+00:00	contact	
3614	100	2019-11-20	15:11:32+00:00	contact	
3615	100	2019-12-19	23:22:05+00:00	contact	
3616	100	2019-12-22	02:51:34+00:00	contact	
3617	100	2020-01-10	15:40:51+00:00	contact	
3618	100	2020-01-19	16:20:51+00:00	contact	
3619	100	2020-01-21	15:09:43+00:00	contact	
3620	100	2020-01-21	20:48:55+00:00	contact	
3621	100	2020-03-06	18:14:58+00:00	contact	

2922f07b-0171-4c6b-a827-9910a9408417-5

	Battery	Date	Time	Device	Type
25449	100	2019-10-15	10:00:52+00:00	pir	
25450	100	2019-10-15	10:00:54+00:00	pir	
25451	44	2019-10-15	10:01:10+00:00	pir	
25452	100	2019-10-15	10:51:19+00:00	pir	
25453	100	2019-10-15	10:51:19+00:00	pir	
25454	100	2019-10-15	10:52:33+00:00	pir	
25455	100	2019-10-15	10:52:33+00:00	pir	
25456	100	2019-10-15	10:52:51+00:00	pir	
25457	100	2019-10-18	10:55:47+00:00	pir	
25458	100	2019-10-18	12:55:54+00:00	pir	
25459	100	2019-10-22	21:01:23+00:00	pir	
25460	100	2019-10-24	03:03:00+00:00	pir	
25461	100	2019-10-24	11:03:29+00:00	pir	
25462	100	2019-10-24	13:03:33+00:00	pir	
25463	100	2019-10-24	15:03:38+00:00	pir	
25464	100	2019-10-24	17:03:42+00:00	pir	
25465	100	2019-10-24	19:03:48+00:00	pir	
25466	100	2019-11-25	13:38:39+00:00	pir	
25467	100	2019-11-25	15:38:43+00:00	pir	
25468	100	2019-12-11	10:52:48+00:00	pir	
25469	100	2019-12-11	12:59:20+00:00	pir	
25470	100	2019-12-11	12:59:24+00:00	pir	
25471	100	2019-12-11	12:59:30+00:00	pir	
25472	100	2019-12-11	12:59:30+00:00	pir	
25473	100	2019-12-11	13:00:22+00:00	pir	

25474	100	2019-12-11	13:18:51+00:00	pir
25475	100	2019-12-11	13:19:55+00:00	pir
25476	92	2019-12-17	16:59:27+00:00	pir
25477	92	2019-12-18	01:21:18+00:00	pir
25478	85	2019-12-31	12:58:02+00:00	pir
25479	77	2020-01-06	14:58:26+00:00	pir
25480	70	2020-01-08	14:55:35+00:00	pir
25481	70	2020-01-08	14:55:36+00:00	pir
25482	70	2020-01-08	14:55:36+00:00	pir
25483	66	2020-01-10	01:12:14+00:00	pir
25484	66	2020-01-10	03:11:56+00:00	pir
25485	62	2020-01-10	16:47:44+00:00	pir

816edb94-69ff-46d0-b5d4-bf657b184351-8

	Battery		Date Time	Device Type
23120	100	2019-07-31	13:02:33+00:00	contact
23121	100	2019-07-31	13:02:44+00:00	contact
23122	85	2019-07-31	13:02:56+00:00	contact
23123	80	2019-08-11	13:25:40+00:00	contact
23124	75	2019-08-15	07:25:17+00:00	contact
23125	75	2019-08-28	09:51:22+00:00	contact
23126	75	2019-09-26	16:44:36+00:00	contact
23127	75	2019-11-20	11:52:32+00:00	contact
23128	75	2019-12-08	13:17:21+00:00	contact
23129	75	2019-12-19	17:10:35+00:00	contact
23130	75	2020-01-10	12:56:59+00:00	contact
23131	75	2020-03-06	20:35:54+00:00	contact
23132	75	2020-03-10	15:48:27+00:00	contact

d1550e19-b800-40a7-bc64-62ea1a27e985-11

	Battery		Date Time	Device Type
25748	100	2019-12-02	11:57:53+00:00	contact
25749	60	2019-12-02	11:58:19+00:00	contact

76730458-b978-4e99-ade0-57bdcc5a9d93-8

	Battery		Date Time	Device Type
25666	100	2019-11-28	15:36:37+00:00	contact
25667	75	2019-11-28	15:36:50+00:00	contact

dc4c7ba7-7f22-4433-8039-dbebf3a3e9fe-10

	Battery		Date Time	Device Type
25379	100	2019-09-12	09:43:04+00:00	contact
25380	100	2019-09-12	09:43:16+00:00	contact
25381	100	2019-09-25	14:01:47+00:00	contact
25382	100	2019-09-26	14:23:48+00:00	contact
25383	100	2019-11-20	17:26:22+00:00	contact
25384	100	2019-12-19	18:38:08+00:00	contact
25385	100	2019-12-27	06:49:21+00:00	contact
25386	100	2020-01-10	11:27:54+00:00	contact
25387	95	2020-01-17	11:13:51+00:00	contact
25388	90	2020-01-30	06:29:25+00:00	contact
25389	85	2020-02-05	16:59:36+00:00	contact

25390	85	2020-02-17	18:33:41+00:00	contact
25391	85	2020-02-19	10:42:14+00:00	contact
25392	75	2020-02-23	14:19:07+00:00	contact
25393	75	2020-02-23	18:30:38+00:00	contact
25394	75	2020-03-02	14:55:20+00:00	contact
25395	75	2020-03-02	16:13:46+00:00	contact
25396	75	2020-03-06	17:13:44+00:00	contact
25397	75	2020-03-15	20:57:26+00:00	contact
25398	75	2020-03-18	18:03:20+00:00	contact

11e8f620-357a-459c-bda9-28f6fe7299fc-8

	Battery		Date Time	Device Type
25951	60	2019-12-04	10:09:25+00:00	contact
25954	100	2019-12-06	12:54:36+00:00	contact
25955	100	2019-12-06	12:54:48+00:00	contact
25956	70	2019-12-06	12:54:59+00:00	contact
25964	100	2019-12-06	13:03:29+00:00	contact
25965	95	2019-12-06	13:03:46+00:00	contact
25968	100	2019-12-06	13:06:33+00:00	contact
27562	100	2019-12-19	18:01:37+00:00	contact
27565	100	2020-01-10	14:13:02+00:00	contact
27567	100	2020-03-06	22:00:13+00:00	contact
27568	100	2020-03-08	14:23:32+00:00	contact
27570	100	2020-03-14	22:00:14+00:00	contact
27574	100	2020-03-15	21:19:19+00:00	contact

fcc7211d-43bb-4abd-872b-71a04ef014e0-9

	Battery		Date Time	Device Type
45194	55	2020-02-29	14:35:45+00:00	contact
45195	100	2020-02-29	14:39:15+00:00	contact
45196	55	2020-02-29	14:39:28+00:00	contact
45197	100	2020-02-29	14:43:28+00:00	contact
45198	70	2020-02-29	14:43:39+00:00	contact
45199	100	2020-02-29	14:47:41+00:00	contact
45200	70	2020-02-29	14:47:52+00:00	contact
45201	100	2020-02-29	14:50:03+00:00	contact
45202	70	2020-02-29	14:50:15+00:00	contact
45203	100	2020-02-29	14:54:16+00:00	contact
45204	60	2020-02-29	14:54:27+00:00	contact
45205	100	2020-02-29	14:57:56+00:00	contact
45206	60	2020-02-29	14:58:08+00:00	contact
45207	100	2020-02-29	15:02:31+00:00	contact
45208	100	2020-02-29	15:02:42+00:00	contact
45209	80	2020-02-29	15:02:53+00:00	contact

a3a96ada-2ae0-4467-a788-a3be6510aa28-8

	Battery		Date Time	Device Type
45149	100	2020-02-12	12:30:27+00:00	contact
45150	100	2020-02-12	12:30:27+00:00	contact
45151	95	2020-02-12	12:30:39+00:00	contact
45152	100	2020-02-12	12:51:31+00:00	contact

45153	95	2020-02-12	12:51:42+00:00	contact
45154	95	2020-02-12	18:35:01+00:00	contact
45155	95	2020-02-12	18:35:13+00:00	contact
45156	95	2020-02-13	00:15:54+00:00	contact
45157	95	2020-02-13	17:16:38+00:00	contact
45158	95	2020-02-13	22:56:03+00:00	contact
45159	90	2020-02-14	09:53:55+00:00	contact
45160	90	2020-02-14	15:53:41+00:00	contact
45161	90	2020-02-14	21:33:07+00:00	contact
45162	90	2020-02-15	14:31:21+00:00	contact
45163	90	2020-02-15	20:10:07+00:00	contact
45164	80	2020-02-16	07:06:54+00:00	contact
45165	80	2020-02-16	18:43:16+00:00	contact
45166	80	2020-02-17	00:21:10+00:00	contact
45167	80	2020-02-17	18:08:14+00:00	contact
45168	80	2020-02-17	23:46:30+00:00	contact
45169	70	2020-02-18	04:08:47+00:00	contact
45170	70	2020-02-18	16:40:12+00:00	contact
45171	70	2020-02-18	22:17:26+00:00	contact
45172	70	2020-02-19	15:06:47+00:00	contact
45173	70	2020-02-19	20:44:40+00:00	contact
45174	70	2020-02-20	19:14:28+00:00	contact
45175	70	2020-02-21	17:41:35+00:00	contact
45176	70	2020-02-21	23:18:08+00:00	contact
45177	70	2020-02-22	16:07:15+00:00	contact
45178	70	2020-02-22	21:44:13+00:00	contact
45179	70	2020-02-22	21:44:13+00:00	contact
45180	70	2020-02-23	14:32:31+00:00	contact
45181	70	2020-02-23	20:09:24+00:00	contact

8a347eec-b71f-4083-a5cd-73f01ee95994-19

	Battery		Date Time	Device Type
3227	100	2019-05-16	15:35:31+00:00	contact
3228	100	2019-07-11	08:22:07+00:00	contact
3229	100	2019-07-22	14:57:06+00:00	contact
3230	100	2019-07-24	16:14:12+00:00	contact
3231	100	2019-07-25	16:26:02+00:00	contact
3232	100	2019-08-28	10:52:04+00:00	contact
3233	100	2019-09-26	17:47:28+00:00	contact
3234	90	2019-10-17	09:24:23+00:00	contact
3235	80	2019-11-12	09:12:09+00:00	contact
3236	80	2019-11-20	17:31:36+00:00	contact
3237	75	2019-12-01	11:40:03+00:00	contact
3238	70	2019-12-04	10:49:15+00:00	contact
3239	70	2019-12-19	18:10:16+00:00	contact
3240	70	2020-01-10	14:29:42+00:00	contact
3241	65	2020-02-07	10:33:16+00:00	contact
3242	65	2020-03-03	18:45:31+00:00	contact
3243	65	2020-03-06	11:45:46+00:00	contact

2 Next Steps

1. Use the time series to identify devices that have reported sufficient values to be worth considering and Section ?? to categorise the devices by type.
2. Identify outliers where the device appears to be broken: ie it's producing continuous streams of values. For the moment, these do not need to be classified, but it would help to understand how many there are.
3. Evaluate the overall failure rate per device month of use for those that are considered 'normal'
4. Estimate the rate of drop and the variation of per device type from battery first reporting a drop in capacity. (e.g. "there's a roughly linear capacity drop of 10% per week for Door Sensors, with a 95% CI of 5 and 25)

If it looks like too much of a challenge to code up the estimation, then I can work those through and share what the code looks like.

[]: