

Test Completed 2020-08-24 3PM PST

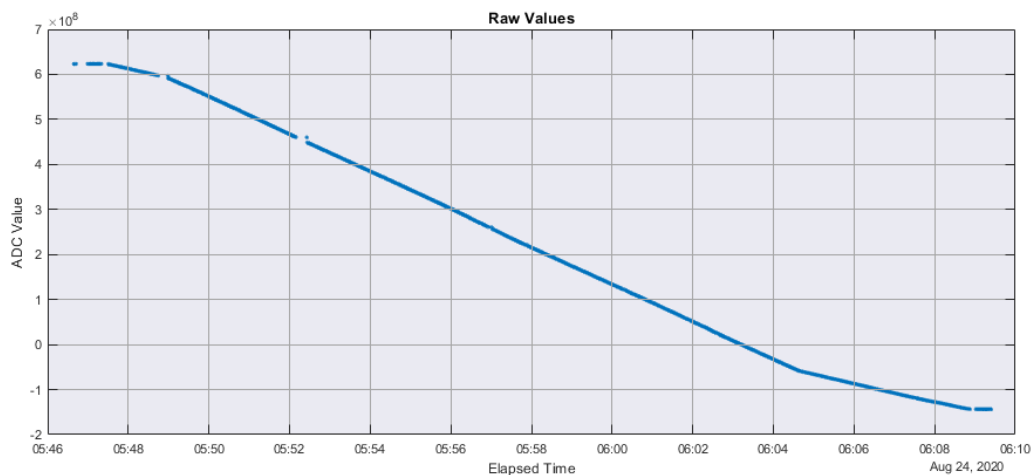
Eric Martin

Notes:

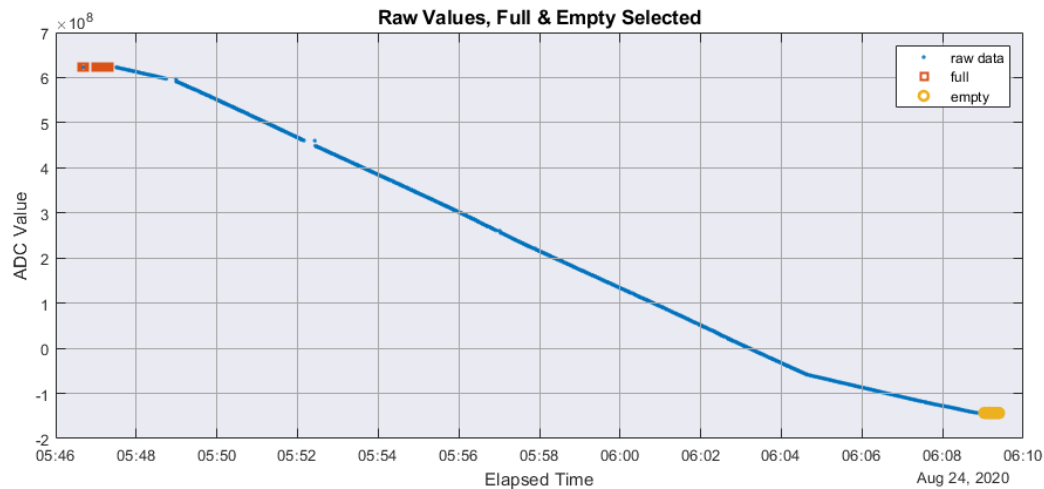
- Samples taken ~1hz manually.
- Started at -100000 JV command on the pump
- Sped up to -200000 JV command for most of the drawdown
- Slowed to -100000 JV commands for the final section.
- Sensor behaves linearly

```
clear; close all;  
load InnerBellowFullToEmptyProfile_20200824_Parsed.mat
```

```
% Plot Raw Data  
plot(time, intval, '.');  
xlabel('Elapsed Time')  
ylabel('ADC Value')  
title('Raw Values')
```



```
% Subselect Data  
full = intval(1:59);  
full_t = time(1:59);  
  
emptee = intval(1917:end);  
emptee_t = time(1917:end);  
plot(time,intval, '.', full_t,full, 's', emptee_t, emptee,'o');  
xlabel('Elapsed Time')  
ylabel('ADC Value')  
title('Raw Values, Full & Empty Selected')  
legend('raw data','full','empty')
```



```
full_mean = mean(full)
```

```
full_mean = 6.2341e+08
```

```
full_std = std(full)
```

```
full_std = 5.0175e+04
```

```
emptee_mean = mean(emptee)
```

```
emptee_mean = -1.4345e+08
```

```
emptee_std = std(emptee)
```

```
emptee_std = 3.4511e+04
```

```
% Find the cal
x = [emptee_mean full_mean];
y = [0 100];
a = polyfit(x,y,1);
fprintf('Calibration is %.10g x ADC + %.6f',a(1),a(2));
```

```
Calibration is 1.304025625e-07 x ADC + 18.706119
```

```
% Plot pre and post cal
postcal = polyval(a,intval);
plot(time,precal, '.', time, postcal, '.')
xlabel('Elapsed Time')
ylabel('Inner Bellows % Full')
title('Pre and Post Calibration Comparison')
legend('precal', 'postcal')
```

