

Subsystem/ Function/ Feature Name Temperature Sensor Longevity
 Date Completed: 4/10/18
 Performed By: Nate, Jerry
 Tested By: Nate, Jerry

Green - Passed Red - Failed Yellow - Not Completed

Concluded Condition of meeting Engineering Specification

I. TESTING SPECIFICATION

Specification Num	Importance	Source	Function	Specification	Unit of Measure	Ideal Value	Acceptable Rang	Comments
S2	3	PRP	System	Water temperature	Fahrenheit (F)	73	72-74	Ideal value would be 80 (water)

II. EQUIPMENT REQUIRED

Specification Num	Equipment or Instrumentation required
S2	Water Reservoir, Nutrient Solution, Arduino Mega, Computer, Sensor, SD card to store data

III. DATA COLLECTION STRATEGY

Specification Num	Data acquisition strategy
S2	Leave temperature probe in prototype tank for five days and record the value of temperature every 30 minutes. The point of this test is to confirm the temperature sensor gives accurate data and that it stays consistence as long term usage of the probe is needed for the full system. This test will also confirm the SD card is properly storing the data from the sensors.

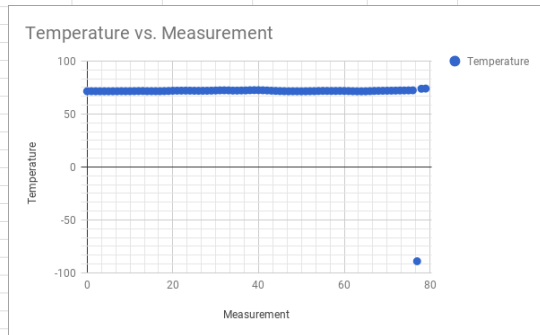
III. TESTING FLOWCHART

- * Leave Temperature probe in the tank
- * Record data every 30 mins
- * Leave the system running for at least 5 days

IV. Raw Data

Time(min)	Temperature(F)	Time(min)	Temperature(F)	Time (min)	Temperature(F)
0	75.47	0	75.47	0	74.8
30	75.47	30	75.36	30	185.5
60	74.80	60	75.81	60	75.03
90	75.14	90	76.26	90	75.03
120	74.57	120	76.04	120	75.14
150	74.13	150	76.26	150	75.14
180	74.01	180	76.26	180	75.03
210	74.24	210	76.15	210	74.91
240	74.46	240	75.93	240	74.8
270	74.35	270	75.36	270	74.86
300	74.13	300	75.03	300	74.82
330	73.56	330	74.80	330	74.78
360	73.22	360	74.57	360	74.75
390	73.34	390	74.46	390	74.72
420	73.00	420	74.57	420	74.01
450	73.34	450	74.57	450	74.01
480	73.79	480	74.46	480	74.24
510	73.79	510	74.46	510	74.24
540	73.56	540	74.01	540	74.13
570	73.90	570	74.01	570	74.01
600	74.01	600	73.90	600	73.9
630	74.01	630	73.90	630	73.9
660	74.01	660	74.13	660	73.79
690	73.90	690	74.13	690	73.68
720	73.79	720	74.24	720	73.56
750	73.68	750	74.35	750	73.56
780	73.56	780	74.35	780	73.68
810	73.45	810	74.35	810	73.68
840	73.34	840	74.24	840	73.68
870	73.11	870	74.24	870	73.68
900	73.00	900	74.13	900	73.68
930	73.00	930	74.13	930	73.56
960	73.22	960	74.13	960	73.68
990	73.22	990	74.01	990	73.79
1020	73.11	1020	74.13	1020	73.9
1050	73.34	1050	74.24	1050	74.01
1080	73.45	1080	74.35	1080	74.13
1110	73.68	1110	74.46	1110	74.24
1140	74.13	1140	74.46	1140	74.35
1170	74.13	1170	74.46	1170	74.46
1200	74.13	1200	74.24	1200	74.46
1230	74.13	1230	74.35	1230	74.57
1260	74.35	1260	74.35	1260	74.57
1290	74.13	1290	74.35	1290	74.57
1320	74.13	1320	74.35	1320	74.57
1350	74.01	1350	74.35	1350	74.57
1380	74.13	1380	74.57	1380	74.46
1410	74.01	1410	74.80	1410	74.35
1440	72.89	1440	74.91	1440	74.35
1470	72.78	1470	75.03	1470	74.35
1500	73.79	1500	75.14	1500	74.46
1530	73.79	1530	75.36	1530	74.46
1560	74.01	1560	75.47	1560	74.46

V. Results



VI. Conclusions

Temperature Sensor shows accurate data but requires at least 1s between its initialization and the first measurement. Otherwise the sensor will return an incorrect value for the first measurement

1590	74.13	1590	75.81	1590	74.46
1620	74.13	1620	76.04	1620	74.35
1650	73.90	1650	76.04	1650	74.01
1680	73.45	1680	75.70	1680	73.56
1710	73.34	1710	75.47	1710	73.68
1740	73.56	1740	75.25	1740	73.56
1770	73.79	1770	75.03	1770	73.56
1800	74.01	1800	74.91	1800	73.68
1830	74.13	1830	74.69	1830	73.68
1860	74.24	1860	74.46	1860	73.56
1890	74.24	1890	74.13	1890	73.68
1920	74.24	1920	74.24	1920	73.9
1950	74.13	1950	74.24	1950	73.9
1980	74.13	1980	74.24	1980	73.9
2010	74.35	2010	74.24	2010	74.01
2040	74.35	2040	74.01	2040	74.01
2070	74.24	2070	74.01	2070	74.13
2100	74.13	2100	74.01	2100	74.01
2130	74.13	2130	74.01	2130	73.9
2160	74.01	2160	74.01	2160	73.56
2190	74.01	2190	74.01	2190	73.56
2220	73.90	2220	74.13	2220	73.34
2250	73.90	2250	74.13	2250	73.22
2280	73.90	2280	74.13	2280	73.34
2310	73.79	2310	74.13	2310	73.34
2340	73.68	2340	74.24	2340	73.34
2370	73.79	2370	74.24	2370	73.45
2400	74.13	2400	74.35	2400	73.68
2430	74.01	2430	74.24	2430	73.68
2460	74.24	2460	74.24	2460	73.68
2490	74.24	2490	74.24	2490	73.56
2520	74.46	2520	74.24	2520	73.68
2550	74.46	2550	74.24	2550	73.79
2580	74.46	2580	74.35	2580	74.01
2610	74.57	2610	74.13	2610	74.13
2640	74.69	2640	74.35	2640	74.57
2670	74.69	2670	74.46	2670	74.57
2700	74.91	2700	74.46	2700	74.57
2730	74.80	2730	74.46	2730	74.57
2760	74.91	2760	74.24	2760	74.69
		2790	74.01	2790	74.69
		2820	74.13	2820	74.57
		2850	74.13	2850	74.57
		2880	74.46	2880	74.57
		2910	74.46	2910	74.69
		2940	74.46	2940	74.69
		2970	74.69	2970	74.69
		3000	74.69	3000	74.69
		3030	74.57	3030	74.57
		3060	74.46	3060	74.46
		3090	74.35	3090	74.46
		3120	74.46	3120	74.24
		3150	74.57	3150	74.35
		3180	74.57	3180	74.13
		3210	74.57	3210	74.01
		3240	74.57	3240	73.9
		3270	74.57	3270	73.68
		3300	74.57	3300	73.56
		3330	74.57	3330	73.45
		3360	74.35	3360	73.45
		3390	74.35	3390	73.45
		3420	74.35	3420	73.56
		3450	74.35	3450	73.45
		3480	74.24	3480	73.68
		3510	74.24	3510	73.56
		3540	74.24	3540	73.56
		3570	74.24	3570	73.45
		3600	74.35	3600	73.34
		3630	74.24	3630	73.45
		3660	74.35	3660	73.45
		3690	74.24	3690	73.45
		3720	74.24	3720	73.56
		3750	74.24	3750	73.56
		3780	74.24	3780	73.56
		3810	74.24	3810	73.45

3840	74.24	3840	73.45
3870	74.24	3870	73.45
3900	74.24	3900	73.56
3930	74.13	3930	73.68
3960	73.90	3960	73.68
3990	73.90	3990	73.68
4020	74.01	4020	73.56
4050	74.13	4050	73.68
4080	74.01	4080	73.79
4110	74.01	4110	73.79
4140	74.01	4140	73.9
4170	74.01	4170	74.13
4200	74.01	4200	74.24
4230	74.01	4230	74.46
4260	73.90	4260	74.57
4290	73.90	4290	74.69
4320	74.01	4320	74.91
4350	73.90	4350	74.91
4380	73.79	4380	74.91
4410	73.90	4410	75.03
4440	73.90	4440	75.14
4470	73.90	4470	75.25
4500	74.01	4500	75.25
4530	74.01	4530	75.14
4560	74.01	4560	74.91
4590	74.01	4590	74.91
4620	74.13	4620	74.8
4650	74.13	4650	74.57
4680	74.13	4680	74.46
4710	74.01	4710	74.35
4740	74.01	4740	74.35
4770	74.01	4770	74.35
4800	74.13	4800	74.13
4830	74.01	4830	74.24
4860	74.13	4860	74.01
4890	74.13	4890	74.01
4920	74.13	4920	73.9
4950	74.13	4950	73.9
4980	74.13	4980	73.9
5010	74.13	5010	73.9
5040	74.13	5040	73.68
5070	74.13	5070	73.79
5100	74.13	5100	73.79
5130	74.13	5130	73.9
5160	74.13	5160	73.9
5190	74.01	5190	74.01
5220	74.01	5220	74.13
5250	74.01	5250	74.13
5280	74.24	5280	74.35
5310	74.24	5310	74.46
5340	74.46	5340	74.46
5370	74.35	5370	74.57
5400	74.57	5400	74.57
5430	74.57	5430	74.46
5460	74.46	5460	74.46
5490	74.24	5490	74.46
5520	74.24	5520	74.8
5550	74.13	5550	74.8
5580	74.01	5580	74.8
5610	74.24	5610	75.03
5640	74.46	5640	75.03
5670	74.46	5670	185.5
5700	74.35	5700	75.14
5730	74.13	5730	75.25
5760	73.56	5760	75.25
5790	73.45	5790	75.36
5820	73.68	5820	75.25
5850	74.13	5850	75.25
5880	74.35	5880	75.14
5910	74.35	5910	75.14
5940	74.24	5940	75.25
5970	73.68	5970	75.14
6000	73.68	6000	75.03
6030	73.56	6030	75.14
6060	73.79	6060	75.03

6090	73.90	6090	74.91
6120	73.90	6120	74.91
6150	74.01	6150	74.8
6180	74.01	6180	74.8
6210	74.24	6210	74.69
6240	74.13	6240	74.69
6270	74.01	6270	74.69
6300	74.01	6300	74.57
6330	74.24	6330	74.57
6360	74.24	6360	74.35
6390	74.13	6390	74.24
6420	74.01	6420	74.13
6450	73.90	6450	74.01
6480	73.79	6480	73.79
6510	73.68	6510	73.79
6540	73.56	6540	73.79
6570	73.56	6570	73.79
6600	73.45	6600	73.68
6630	73.45	6630	73.9
6660	73.34	6660	73.9
6690	73.56	6690	74.01
6720	73.68	6720	74.13
6750	73.68	6750	74.24
6780	73.56	6780	74.24
6810	73.68	6810	74.24
6840	73.79	6840	74.24
6870	73.68	6870	74.35
6900	73.90	6900	74.35
6930	73.90	6930	74.35
6960	74.35	6960	74.24
6990	74.46	6990	74.35
7020	74.24	7020	74.35
7050	74.69	7050	74.24
		7080	74.35
		7110	74.35
		7140	74.35
		7170	74.46
		7200	74.46
		7230	74.57
		7260	74.57
		7290	74.57
		7320	74.57
		7350	74.57
		7380	74.57
		7410	74.46
		7440	74.24
		7470	74.24
		7500	74.13
		7530	74.01
		7560	73.9
		7590	73.9
		7620	73.9
		7650	73.79
		7680	74.01
		7710	73.79
		7740	73.79
		7770	73.68
		7800	73.56
		7830	73.45
		7860	73.45
		7890	73.45
		7920	73.45
		7950	73.45
		7980	73.34
		8010	73.34
		8040	73.22
		8070	73.22
		8100	73.34
		8130	73.45
		8160	73.79
		8190	73.79
		8220	73.9
		8250	73.9
		8280	74.01
		8310	74.01

