

TEAM 1 SUMMARY MEMO

Dear Ex-space Corporation,

On Wednesday, May 25, Team 1 successfully completed construction of 1 Lunar Lander for the Ex-Space Corporation. The final product was completed for an Actual Cost (AC) of \$274.99, approximately 67% higher than the planned value of \$184.50. The project also ran over time, taking 62 minutes and 20 seconds as opposed to the planned time of 43.5 minutes. This was due mainly to lack of training and inefficient use of build time, along with various unanticipated build time disruptions, including an earthquake alarm and subsequent power outage that lasted for 1 minute, and a team member rotation that necessitated team reorientation. We also delivered our hatch late, incurring a penalty of \$25, and two layoffs took place, one at 30 minutes in and the other at approximately 58 minutes, incurring a severance cost of \$12.17. This and other expenses raised the total expenditure to \$469.84.

However, SPI remained at above 80% throughout the project, and we are pleased to report a profit margin of 20.7%. Total revenues stand at \$592.70, with a net profit total of \$122.69.

PLANNING AND CONTROL SHEET

Screenshot below...see please see attached excel file for full Planning and Control Sheet

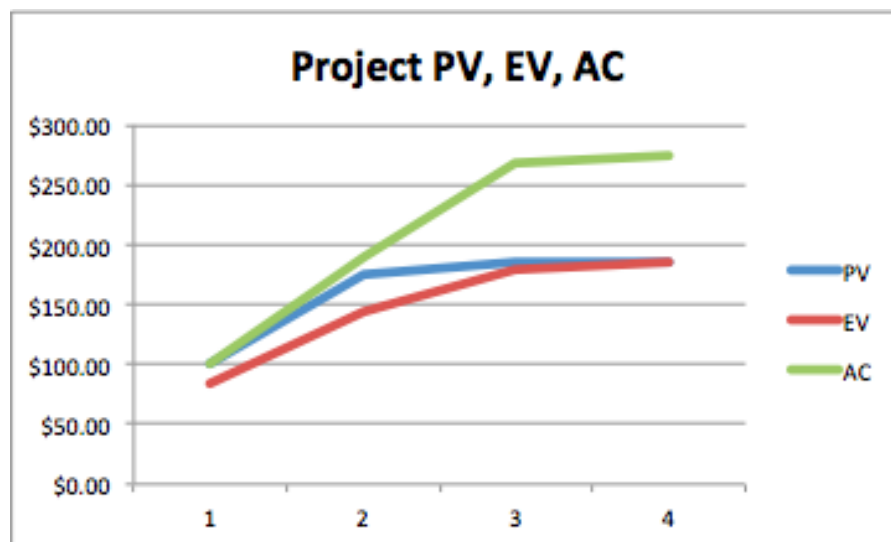
Lunar Lander Project: <u>Team 1</u>												
			Build #1				Build #2				Build #3	
ID	Task Name	Staff		5	10	15	20	25	30	35	40	45
1	Sort Pieces & Deliver Radar	Rose	PV	\$5.00	\$5.00	\$3.00	\$0.00					
			EV	\$0.00	\$0.00	\$0.00	\$13.00					
			AC	\$5.00	\$5.00	\$5.00	\$2.00					
3	Steps 41-42	Rose	PV			\$2.00	\$4.00					
			EV			\$0.00	\$6.00					
			AC			\$0.00	\$3.00					
4	Steps 43-45	Rose	PV				\$1.00	\$5.00	\$4.00			
			EV				\$0.00	\$0.00	\$10.00			
			AC				\$0.00	\$5.00	\$5.00			
6	Steps 1-2 (x4)	Elton	PV	\$5.00	\$0.00	\$0.00						
			EV	\$0.00	\$0.00	\$5.00						
			AC	\$5.00	\$5.00	\$0.50						
7	Steps 3-6	Elton	PV		\$5.00	\$0.00						
			EV		\$0.00	\$5.00						
			AC		\$0.00	\$2.50						
8	Steps 7-11	Elton	PV			\$5.00	\$0.00					
			EV			\$0.00	\$5.00					
			AC			\$2.00	\$4.00					
9	Connection #1	Elton	PV				\$1.00					
			EV				\$1.00					
			AC				\$1.00					
10	Step 12 (3x)	Elton	PV				\$4.00	\$4.00	\$0.00			
			EV				\$0.00	\$0.00	\$8.00			
			AC				\$0.00	\$5.00	\$2.00			
11	Steps 13-15	Elton	PV					\$1.00	\$3.00	\$0.00		
			EV					\$0.00	\$0.00	\$4.00		
			AC					\$0.00	\$3.00	\$0.50		
12	Steps 16-18	Elton	PV						\$2.00	\$3.00	\$0.00	
			EV						\$0.00	\$0.00	\$5.00	
			AC						\$0.00	\$4.50	\$4.00	
13	Connection #2	Elton	PV							\$1.00	\$0.00	
			EV							\$0.00	\$1.00	
			AC							\$0.00	\$1.00	
15	Steps 19-22	Colin	PV	\$5.00	\$3.00							

LUNAR LANDER BUILD SUMMARY CHARTS

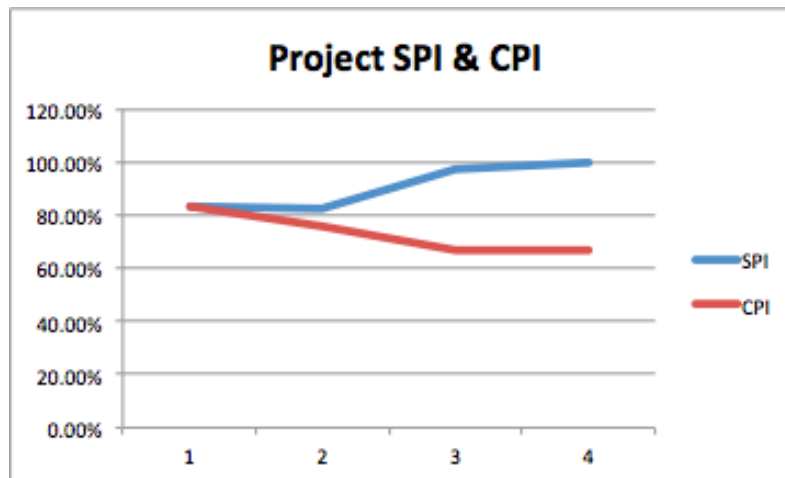
t	PV	EV	AC	SV	SPI	CV	CPI	BAC	EAC	ETC
1	\$100.00	\$83.36	\$100.00	(\$16.65)	83.36%	(\$16.65)	83.36%	\$184.50	\$221.34	\$121.34
2	\$175.00	\$143.71	\$190.00	(\$31.29)	82.12%	(\$46.29)	75.64%	\$184.50	\$243.93	\$53.93
3	\$184.50	\$179.07	\$268.00	(\$5.44)	97.05%	(\$88.94)	66.82%	\$184.50	\$276.13	\$8.13
4	\$184.50	\$184.50	\$274.99	\$0.00	100%	(\$90.49)	67.09%	\$184.50	\$274.99	\$0.00

Our original planned value for building the Lunar Lander was \$184.50. We expected to incur those costs over 43.5 minutes of work between four people and a project manager (with layoffs occurring towards the end for two people). As you can see from the chart below, our Actual Cost (AC) ended up being much higher and finishing at \$274.99. This was the result of the project taking 62 minutes and 20 seconds.

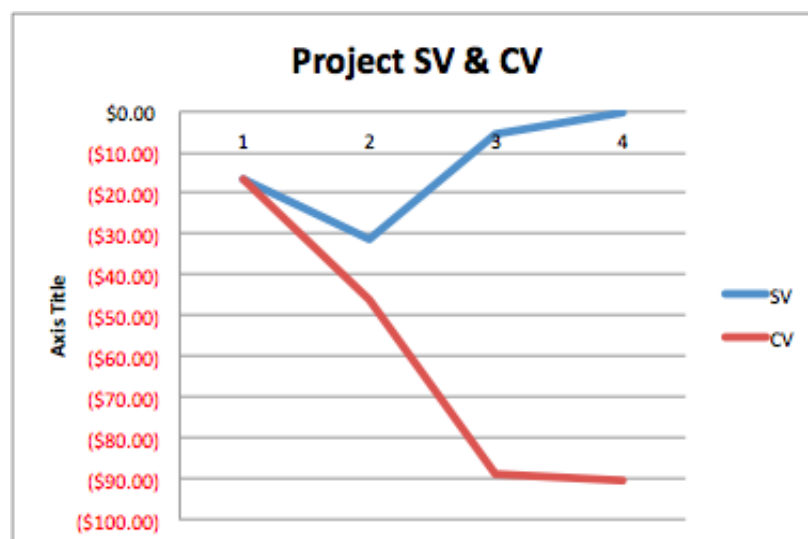
We were behind on AC and EV throughout the whole build. Looking at the PV, EV, AC chart, we see the green line (AC) was above the blue line (PV) the whole time and the red line (EV) remained below the blue line (AC) for the entirety of the build (until the very end). The build period that put us the farthest behind on cost was clearly period 3. We had originally planned to be done fairly early in the third build period, but instead we ended up using the entire period and spending \$83.50 more than planned for that period. This results in a large gap between the green and blue lines in the PV, EV, AC chart.



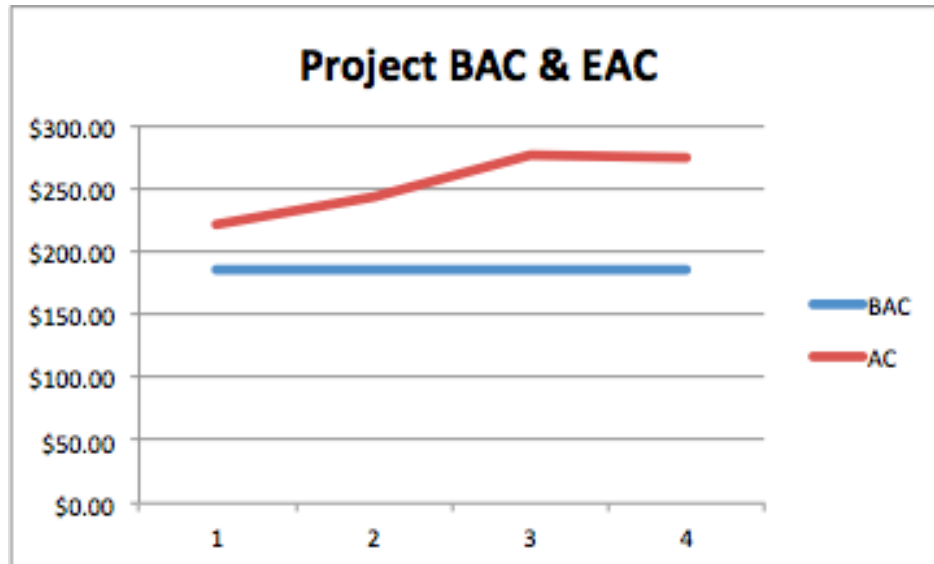
The next chart (see below) shows the Schedule Performance Index (SPI) and the Cost Performance Index (CPI). Like the PV, AC, EV chart above, this graph also shows that we were behind schedule for the entirety of the build. We are pleased to say that SPI stayed above 80% for the whole project but we were disappointed with our cost performance as the CPI dipped all the way down to 68.82% during the third build period. In our planning document, we specified that we were hoping to keep SPI and CPI above 75% and the chart shows we went 1 for 2 in doing so.



The project Schedule Variance (SV) and Cost Variance (CV) tells a similar story. Once again, our costs were out of hand and stayed out of hand for the entirety of the build. At no point did we really make up any ground from a cost perspective. The SV presented a somewhat different story however. As the SPI chart shows, we made up some of the variance pretty quickly during the third and fourth build period. The line naturally trends towards zero as the project ends, but if you look at the somewhat steep slope of the line, it indicates that we made up the necessary ground in a somewhat efficient way towards the end of the build.



Finally, we will look at the project Budget at Completion (BAC) and Estimate at Completion (EAC). The BAC obviously stays level at \$184.50 for the entirety of the build because it is equal to our planned value. The EAC tells the story of what we expected the project to cost at completion during each individual tracking period. In this case, the estimated costs rose in tracking period one, two, and three. But we made up some time and costs during period four and you can see the EAC coming down slightly in that fourth period. This again helps make the point that we performed fairly well towards the very end of the project.



PROFIT & LOSS STATEMENT

BID:	Team 1
Schedule (min)	56 min.
Labor Budget	\$280
Award	\$562.50
PLAN:	
Schedule (min)	43.5 min
Labor Budget	184.50
Incentive Option:	Yes
Actual Time:	62.33 min

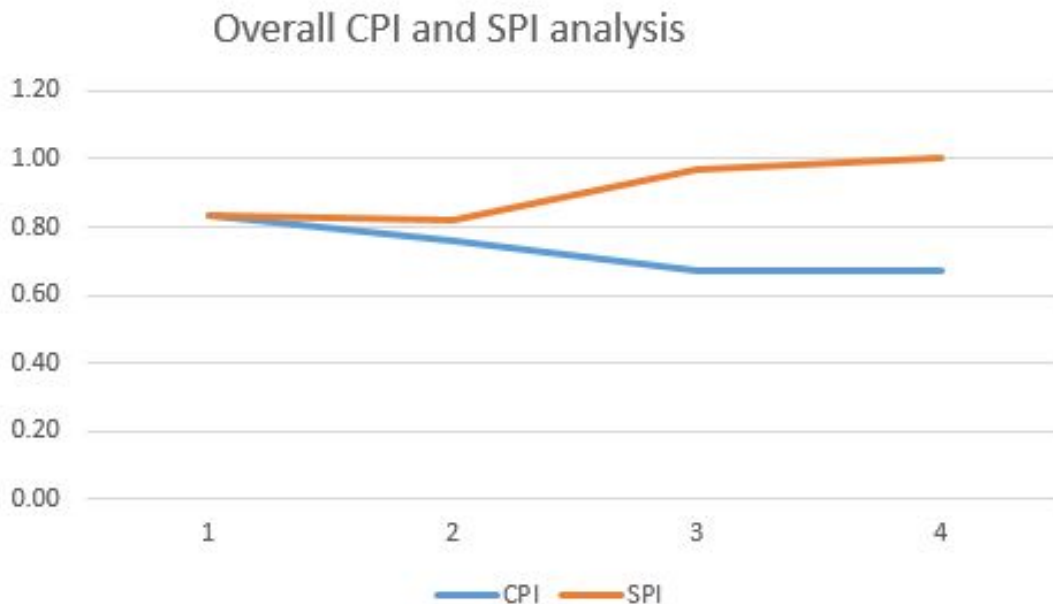
REVENUES:	
Contract Award	\$562.50
Hatch Subcontract Award	\$15
Penalties Received	--
Additional Awards	--
Incentive Bonus	--
Other Incentive Bonuses	--
Approved Change Orders	\$15 (Golden rods)
Other	--
Total Revenues:	\$592.50
EXPENSES:	
Labor Cost	\$275.00
Severance Cost	\$12.17
Materials	\$80
Expedite Fee	\$40
Subcontractor Expense	--
Radar	\$10
Hatch	\$15
Incentive Penalties Paid	\$12.67
Other Penalties Paid	\$25 (Late Hatch)
Additional Labor	--
Testing Rework Fees	--
Other	--
Total Expenses:	\$469.84
Net Profit:	\$122.66
% of Revenue	20.70%

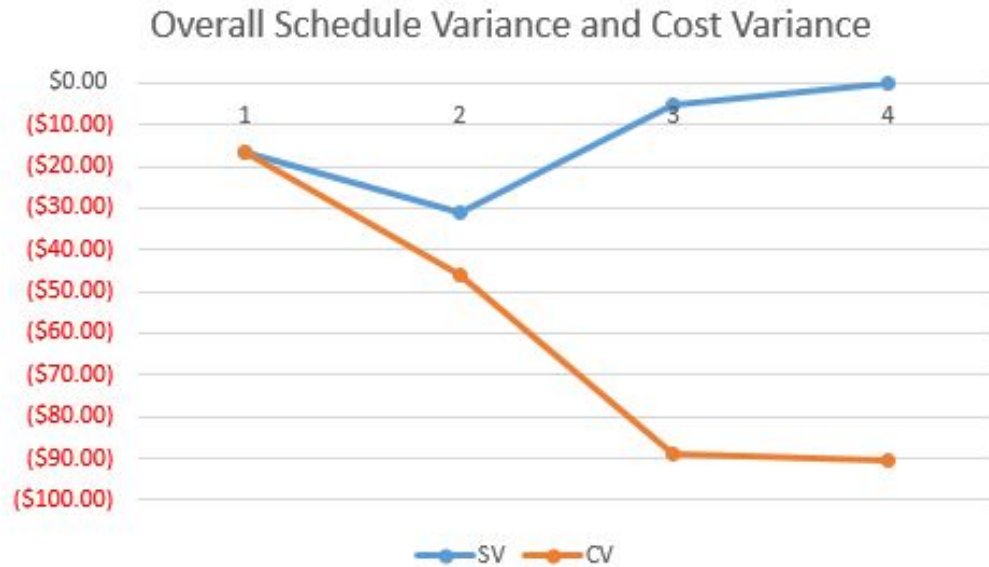
VARIANCE REPORT

(See attached excel sheet for detailed variance report spreadsheet)

Overall Variance Analysis

Overall the project was behind schedule and over budget. Our original planned budget was \$184.50 and schedule was 43.5 minutes with a team of 4 builders and one project manager. At the end of the build, the project cost was \$274.99 - 67% higher than the planned value. Also, the project took 62 minutes and 20 seconds or 44% higher than the planned duration. The reasons are that the build team was not trained or proficient enough to execute the tasks in the allotted time frames. In addition, there were some factors that caused disruption to the smooth flow and execution of the plan; for example, we did not have a continuity management plan in case of an earthquake, which occurred and caused a stoppage of build efforts by 1 minute. In addition, one member from each of the three teams was rotated to work in another team, an unanticipated development that required additional time for reorientation, causing the already delayed tasks to be executed over a longer time frame. The hatch was delivered late and accordingly we had to pay a penalty of \$25. Also, the layoff of two resources at minutes 30 and 58 respectively had an impact with severance costs of \$12.17. Team 1 also opted for the incentive for which the team would receive \$2 for every minute saved before the bid time of 56 mins. However since the team overshot the bid time we had to incur \$2/minute which summed up to \$12.67.





The summary below of each build emphasises on tasks that have affected the project in terms of cost and schedule.

BUILD 1:

1. Task 1 of “Sort Pieces & Deliver Radar” took 2 minutes longer than the planned duration and labor costs increased by \$4.
2. Task 6 which was part of building the base took 5 minutes longer than planned and it affected the cost and the start of Task 7. This can be seen in the CPI and CV plots where the graph dips down. The schedule and costs were however covered up in the successive task (Task 7).
3. Task 10 “Building the legs” which was scheduled to begin in Build 1 did not begin on schedule due to delay in finish time of the previous tasks but it was executed under budget in Build 2.
4. Task 19 “Building one side of the capsule” was completed significantly under budget. Planned value was \$6 overall but actual costs was \$1.50 and this stands out significantly in CPI graph of Build 1 and is noticeable in the CV graph as well.



BUILD 2:

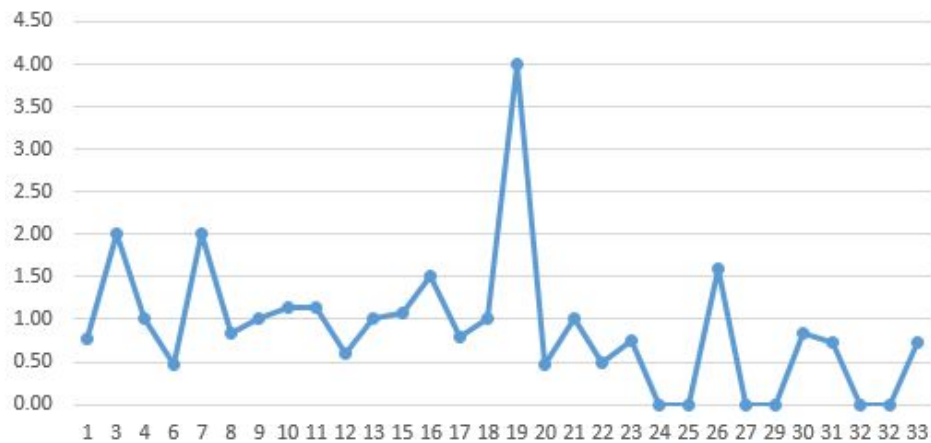
1. Task 12 "Building the ladder" began late and ended late and caused an additional cost of \$4.50
2. Task 24 "Top of the capsule" affected the schedule and cost of the project significantly. The planned time was 6 minutes beginning in Build 1 and completion scheduled within 2 minutes of Build 2. However, though it began on time, completion took almost 30 minutes, and this severely affected the budget of the project costing an additional \$24. This is prominent in the SV and CV plot of Build 2 as well as Build 1.
3. Task 25 "Connecting the hatch" which was scheduled to begin and be completed within the first minute of Build 2 was completed in Build 3.

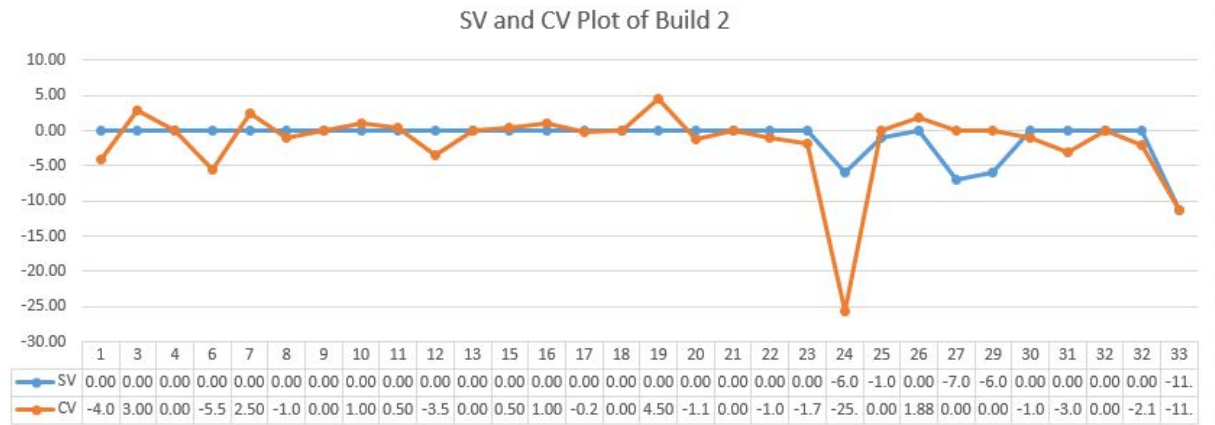
4. Task 27 “Building the corner of capsule and attaching the radar” which was scheduled to begin in Build 2 and be completed with 7 minutes was pushed to Build 3.
5. Task 29 “Building read end of rover” has a similar story.
6. At the end of Build 2 Colin began assisting other build members in completing their tasks as he had completed his build tasks relatively on time and the delayed tasks needed attention and effort from team members to avoid further delay.

SPI Trend of Build 2



CPI Trend of Build 2

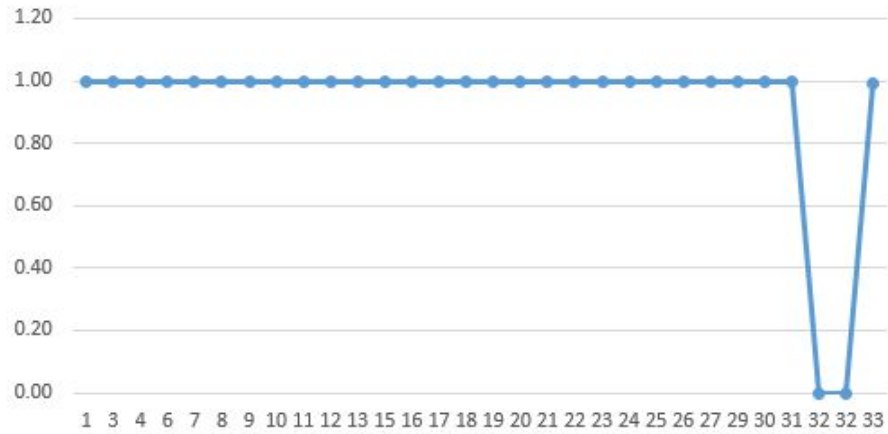




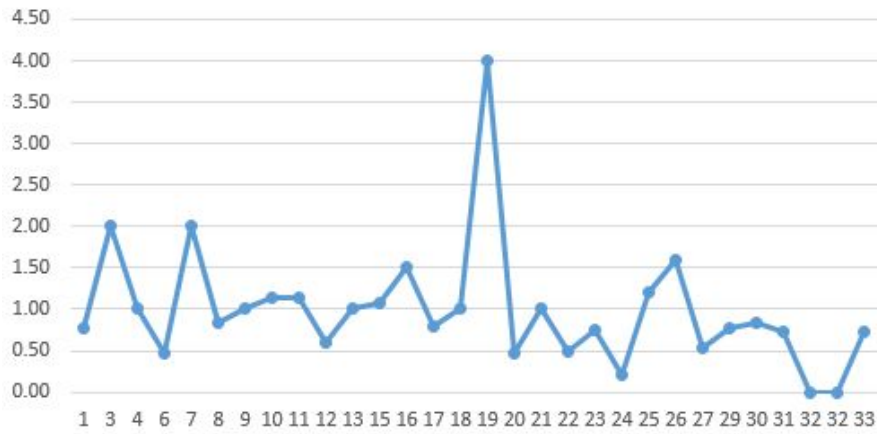
BUILD 3:

1. Task 27 "Building the corner of capsule and attaching the radar," which was scheduled to begin and complete in Build 2, was executed in Build 3 and yet was completed behind the estimated time frame and was over budget. It took 5 minutes in addition to the planned time and was completed 30 minutes after the planned finish time.
2. Task 29 "Building read end of rover" began in Build 3 instead of Build 2 and took 2 minutes longer than planned, and correlatively costed \$2 more.
3. "Task 32 -Elton assisting others and making final connections" began late and took approximately 10 minutes longer than the planned time and costed \$11 in addition to the budget. It was carried forward to Build 4
4. "Task 32 -Colin assisting others and making final connections" took 25 minutes instead of 2.5 minutes and likewise costed \$25 instead of \$2.5. This was also carried forward to Build 4.
5. Since the overall project schedule was also delayed the project had to incur costs for the PM's work, which amounted to \$15 in Build 3.

SPI Trend of Build 3



CPI Trend of Build 3



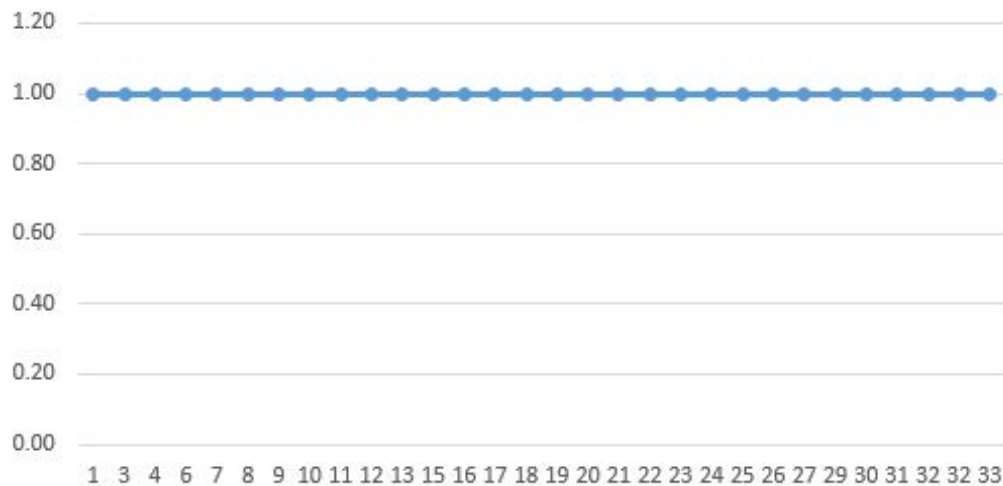
SV and CV Plot of Build 3



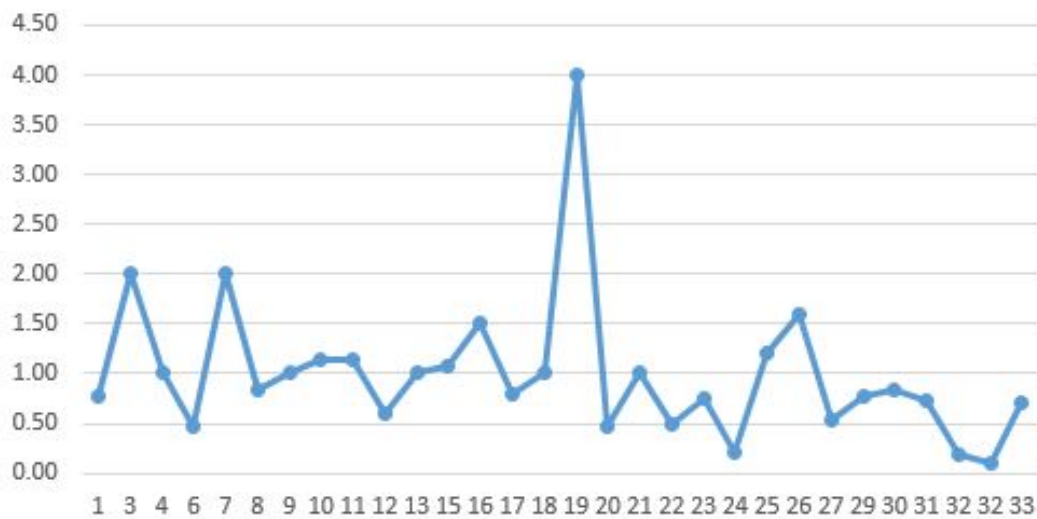
BUILD 4:

1. Build 4 wasn't planned initially but was conducted to finish leftover tasks from the previous builds. It was mostly making the final connections executed by Colin and Elton and was completed with 2.5 minutes of the build. It costed \$7.99 including the labor costs of the two builders and the PM.

SPI Trend of Build 4



CPI Trend of Build 4



SV and CV Plot of Build 4

