

ID	Task Name	Fixed Cost	Total Cost	Baseline	Variance	Actual
1	<b>Asteroid sample retrieval with a 3U CubeSat</b>	<b>\$0.00</b>	<b>\$14,655,008.00</b>	<b>\$4,419,000.00</b>	<b>\$10,236,008.00</b>	<b>\$0.00</b>
2	<b>(0) Initiate the project</b>	<b>\$0.00</b>	<b>\$3,948,128.00</b>	<b>\$8,000.00</b>	<b>\$3,940,128.00</b>	<b>\$0.00</b>
3	Start	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
4	<b>Establish location for facilities in U.S.</b>	<b>\$0.00</b>	<b>\$3,749,600.00</b>	<b>\$3,000.00</b>	<b>\$3,746,600.00</b>	<b>\$0.00</b>
5	Survey of facilities	\$0.00	\$57,600.00	\$0.00	\$57,600.00	\$0.00
6	Purchasing of facilities	\$3,000,000.00	\$3,076,800.00	\$0.00	\$3,076,800.00	\$0.00
7	Acquire office equipment	\$80,000.00	\$88,000.00	\$0.00	\$88,000.00	\$0.00
8	Acquire manufacturing equipment	\$500,000.00	\$527,200.00	\$0.00	\$527,200.00	\$0.00
9	Get funding	\$0.00	\$198,528.00	\$0.00	\$198,528.00	\$0.00
10	Start project	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
11	<b>(1) Research first mission</b>	<b>\$0.00</b>	<b>\$1,145,120.00</b>	<b>\$24,500.00</b>	<b>\$1,120,620.00</b>	<b>\$0.00</b>
12	Hire staff	\$800,000.00	\$881,120.00	\$500.00	\$880,620.00	\$0.00
13	Establish preliminary mission profile	\$0.00	\$84,800.00	\$4,800.00	\$80,000.00	\$0.00
14	<b>Suitable locations, modifications needed to 3U satellite.</b>	<b>\$0.00</b>	<b>\$179,200.00</b>	<b>\$19,200.00</b>	<b>\$160,000.00</b>	<b>\$0.00</b>
15	Investigate suitable targets using LightCurve database.	\$0.00	\$81,600.00	\$4,800.00	\$76,800.00	\$0.00
16	Estimate delta-V budget for mission	\$0.00	\$9,600.00	\$0.00	\$9,600.00	\$0.00
17	Ensure legal precedence for target	\$0.00	\$22,400.00	\$0.00	\$22,400.00	\$0.00
18	Consult needed RF licencing for mission	\$0.00	\$9,600.00	\$0.00	\$9,600.00	\$0.00
19	Scope first sample retrieval	\$0.00	\$56,000.00	\$0.00	\$56,000.00	\$0.00
20	Release mission report	\$0.00	\$0.00	\$14,400.00	-\$14,400.00	\$0.00
21	Stage gate: Do we have the technical confidence and commercial wherewithall to proceed?	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
22	<b>(2) Engineering Model</b>	<b>\$0.00</b>	<b>\$3,134,560.00</b>	<b>\$0.00</b>	<b>\$3,134,560.00</b>	<b>\$0.00</b>
23	<b>Design and Construction of Engineering Model</b>	<b>\$0.00</b>	<b>\$2,589,960.00</b>	<b>\$0.00</b>	<b>\$2,589,960.00</b>	<b>\$0.00</b>
24	<b>Develop needed electronics</b>	<b>\$50,000.00</b>	<b>\$126,800.00</b>	<b>\$0.00</b>	<b>\$126,800.00</b>	<b>\$0.00</b>
25	Power management system design	\$0.00	\$9,600.00	\$0.00	\$9,600.00	\$0.00
26	Radio system design	\$0.00	\$48,000.00	\$0.00	\$48,000.00	\$0.00
27	Flight computer design	\$0.00	\$19,200.00	\$0.00	\$19,200.00	\$0.00

ID	Task Name	Fixed Cost	Total Cost	Baseline	Variance	Actual
28	<b>Develop needed software</b>	<b>\$15,000.00</b>	<b>\$134,360.00</b>	<b>\$0.00</b>	<b>\$134,360.00</b>	<b>\$0.00</b>
29	Embedded systems software design	\$0.00	\$101,760.00	\$0.00	\$101,760.00	\$0.00
30	RF systems software design	\$0.00	\$17,600.00	\$0.00	\$17,600.00	\$0.00
31	<b>Develop sample retrieval mechanism</b>	<b>\$100,000.00</b>	<b>\$520,800.00</b>	<b>\$0.00</b>	<b>\$520,800.00</b>	<b>\$0.00</b>
32	CAD design of component	\$0.00	\$28,800.00	\$0.00	\$28,800.00	\$0.00
33	Structural analysis of component	\$0.00	\$36,800.00	\$0.00	\$36,800.00	\$0.00
34	Fatigue and strain analysis of system	\$0.00	\$108,800.00	\$0.00	\$108,800.00	\$0.00
35	Mechanical integration review	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
36	<b>Construct model</b>	<b>\$200,000.00</b>	<b>\$246,400.00</b>	<b>\$0.00</b>	<b>\$246,400.00</b>	<b>\$0.00</b>
37	Procure parts	\$0.00	\$2,400.00	\$0.00	\$2,400.00	\$0.00
38	Assemble components	\$0.00	\$5,600.00	\$0.00	\$5,600.00	\$0.00
39	Test operating of model	\$0.00	\$38,400.00	\$0.00	\$38,400.00	\$0.00
40	Review propulsion system	\$1,000,000.00	\$1,079,200.00	\$0.00	\$1,079,200.00	\$0.00
41	Integration check	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
42	Manufacture Engineering Model Parts	\$250,000.00	\$418,000.00	\$0.00	\$418,000.00	\$0.00
43	Procure Engineering Model Parts	\$200,000.00	\$200,000.00	\$0.00	\$200,000.00	\$0.00
44	Final assembly of EM	\$0.00	\$3,600.00	\$0.00	\$3,600.00	\$0.00
45	Establish test facilities	\$80,000.00	\$107,200.00	\$0.00	\$107,200.00	\$0.00
46	<b>Consulting ride-share requirements</b>	<b>\$0.00</b>	<b>\$544,600.00</b>	<b>\$0.00</b>	<b>\$544,600.00</b>	<b>\$0.00</b>
47	Determine appropriate orbit to be launched into	\$0.00	\$60,000.00	\$0.00	\$60,000.00	\$0.00
48	Establish testing and documentation needed for ride-share requirements	\$0.00	\$43,200.00	\$0.00	\$43,200.00	\$0.00
49	Develop in-space commissioning software.	\$30,000.00	\$404,400.00	\$0.00	\$404,400.00	\$0.00
50	Assess logistics to get system to rideshare location	\$25,000.00	\$37,000.00	\$0.00	\$37,000.00	\$0.00
51	<b>(2) Test campaign of Engineering model</b>	<b>\$0.00</b>	<b>\$194,000.00</b>	<b>\$86,900.00</b>	<b>\$107,100.00</b>	<b>\$0.00</b>
52	Establish test plan	\$0.00	\$31,200.00	\$500.00	\$30,700.00	\$0.00
53	Identify test location and resources	\$50,000.00	\$88,400.00	\$28,800.00	\$59,600.00	\$0.00
54	Hot fire testing of integrated system	\$20,000.00	\$38,400.00	\$0.00	\$38,400.00	\$0.00
55	Simulate mission with EM.	\$0.00	\$36,000.00	\$28,800.00	\$7,200.00	\$0.00

ID	Task Name	Fixed Cost	Total Cost	Baseline	Variance	Actual
56	Stage gate: Do we have the technical confidence and comr	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
57	<b>(3) Flight model</b>	<b>\$4,000,000.00</b>	<b>\$4,409,200.00</b>	<b>\$10,000.00</b>	<b>\$4,399,200.00</b>	<b>\$0.00</b>
58	<b>Design and Build sub systems</b>	<b>\$150,000.00</b>	<b>\$397,200.00</b>	<b>\$10,000.00</b>	<b>\$387,200.00</b>	<b>\$0.00</b>
59	Establish Engineering Changes needed from EM.	\$0.00	\$36,000.00	\$0.00	\$36,000.00	\$0.00
60	Procure needed components	\$0.00	\$48,000.00	\$0.00	\$48,000.00	\$0.00
61	Integrate changes.	\$0.00	\$163,200.00	\$0.00	\$163,200.00	\$0.00
62	Test integrated system	\$0.00	\$12,000.00	\$0.00	\$12,000.00	\$0.00
63	Stage gate: Do we have the technical confidence and comr	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
64	<b>(4) Flight campaign</b>	<b>\$0.00</b>	<b>\$904,320.00</b>	<b>\$2,300,000.00</b>	<b>-\$1,395,680.00</b>	<b>\$0.00</b>
65	Communicate and book rideshare flight.	\$320,000.00	\$497,280.00	\$0.00	\$497,280.00	\$0.00
66	Establish ground control location	\$10,000.00	\$24,000.00	\$0.00	\$24,000.00	\$0.00
67	<b>Commisioning flight</b>	<b>\$0.00</b>	<b>\$252,000.00</b>	<b>\$0.00</b>	<b>\$252,000.00</b>	<b>\$0.00</b>
68	Monitor system in-space	\$0.00	\$252,000.00	\$0.00	\$252,000.00	\$0.00
69	Functional check	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
70	<b>Flight mission</b>	<b>\$0.00</b>	<b>\$31,040.00</b>	<b>\$0.00</b>	<b>\$31,040.00</b>	<b>\$0.00</b>
71	First delta-v maneuver	\$0.00	\$640.00	\$0.00	\$640.00	\$0.00
72	Monitor system	\$0.00	\$29,200.00	\$0.00	\$29,200.00	\$0.00
73	Rendezvous with asteroid	\$0.00	\$640.00	\$0.00	\$640.00	\$0.00
74	Functional check	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
75	Perform collection	\$0.00	\$560.00	\$0.00	\$560.00	\$0.00
76	<b>Return mission</b>	<b>\$0.00</b>	<b>\$34,200.00</b>	<b>\$0.00</b>	<b>\$34,200.00</b>	<b>\$0.00</b>
77	Functional check	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
78	Departure burn	\$0.00	\$3,200.00	\$0.00	\$3,200.00	\$0.00
79	Monitor system	\$0.00	\$23,200.00	\$0.00	\$23,200.00	\$0.00
80	Re-entry orbit burn	\$0.00	\$5,000.00	\$0.00	\$5,000.00	\$0.00
81	De-orbit burn	\$0.00	\$2,800.00	\$0.00	\$2,800.00	\$0.00
82	<b>Sample collection</b>	<b>\$0.00</b>	<b>\$65,800.00</b>	<b>\$0.00</b>	<b>\$65,800.00</b>	<b>\$0.00</b>
83	Ground control crew relocation	\$5,000.00	\$14,600.00	\$0.00	\$14,600.00	\$0.00
84	Clear and prepare impact location	\$0.00	\$7,200.00	\$0.00	\$7,200.00	\$0.00
85	Perform collection	\$0.00	\$44,000.00	\$0.00	\$44,000.00	\$0.00