

**ANTARES OA-5 MISSION NOMINAL TIMELINE**

<b>Event</b>	<b>Time from Launch (sec)</b>		
	<b>Window Open</b>	<b>Window Middle</b>	<b>Window Close</b>
Stage 1 Motor Ignition	0	0	0
Lift Off	3.7	3.7	3.7
Stage 1 MECO	214.8	214.8	214.8
Stage 1 Separation	220.8	220.8	220.8
Fairing Separation	245.4	245.8	245.8
Stage 1/2 Interstage Separation	250.4	250.8	250.8
Stage 2 Ignition	257.9	258.3	258.3
Stage 2 Burn Out	420.1	420.7	420.7
Payload Separation (Orbit Insertion)	540.1	540.7	540.7

Nominal mission timeline for Open, Middle, and Close Window trajectories are summarized here. More detailed mission timelines are provided below.

Event	Antares OA-5 Window Open				
	Time (sec)	Altitude (km)	Latitude (deg N)	Longitude (deg E)	Velocity (m/s)
STAGE 1 IGNITION	0	-0.01	37.834	-75.488	0
STAGE 1 THROTTLE DOWN	189.79	78.225	37.041	-74.151	3088.381
STAGE 1 SHUTDOWN	214.75	99.437	36.581	-73.413	3909.936
STAGE SEPARATION	220.75	104.528	36.455	-73.214	3915.82
ENABLE RCS	222.25	105.762	36.424	-73.165	3913.159
ENABLE PEG STEERING	226.75	109.371	36.329	-73.017	3904.411
DISABLE RCS FOR FAIRING SEP	245.14	122.677	35.941	-72.418	3872.08
FAIRING SEPARATION	245.42	122.862	35.935	-72.409	3871.63
RE-ENABLE RCS AFTER FAIRING SEP	247.42	124.165	35.893	-72.344	3868.482
FAIRING SEP DETECTION	247.92	124.487	35.882	-72.328	3867.698
DISABLE RCS FOR INTERSTAGE SEP	250.34	126.02	35.831	-72.25	3863.963
STAGE 1/2 INTERSTAGE SEPARATION	250.42	126.07	35.829	-72.248	3863.841
STAGE 2 TVC ENABLE	257.42	130.274	35.681	-72.023	3853.627
STAGE 2 IGNITION	257.92	130.562	35.67	-72.007	3852.926
STAGE 2 TAIL-OFF	411.93	194.621	30.806	-65.773	7472.82
STAGE 2 COAST	420.14	194.543	30.416	-65.34	7527.794
ORIENT FOR PAYLOAD SEP	430.14	194.412	29.939	-64.817	7529.477
DISABLE RCS FOR PAYLOAD SEP	540.06	193.448	24.543	-59.394	7533.501
PAYLOAD SEPARATION	540.14	193.447	24.539	-59.391	7533.502
RE-ENABLE RCS AFTER PAYLOAD SEP	542.14	193.439	24.439	-59.297	7532.967
ORIENT FOR CCAM	543.14	193.436	24.389	-59.25	7533.006
CONTAMINATION/COLLISION AVOIDANCE MANUEVER	840.14	196.402	8.915	-46.695	7529.514
RCS TANK DEPLETION	960.14	199.964	2.488	-42.071	7524.447
POST RCS BLOWDOWN COAST	1050.14	203.483	-2.342	-38.646	7520.151
END OF MISSION	1060.14	203.917	-2.878	-38.265	7519.623

Event	Antares OA-5 Window Middle				
	Time (sec)	Altitude (km)	Latitude (deg N)	Longitude (deg E)	Velocity (m/s)
STAGE 1 IGNITION	0	-0.01	37.834	-75.488	0
STAGE 1 THROTTLE DOWN	189.79	78.302	36.988	-74.205	3087.723
STAGE 1 SHUTDOWN	214.75	99.548	36.498	-73.498	3909.176
STAGE SEPARATION	220.75	104.647	36.364	-73.308	3915.039
ENABLE RCS	222.25	105.882	36.331	-73.261	3912.373
ENABLE PEG STEERING	226.75	109.497	36.23	-73.119	3903.611
DISABLE RCS FOR FAIRING SEP	245.56	123.099	35.809	-72.533	3870.555
FAIRING SEPARATION	245.84	123.283	35.803	-72.525	3870.106
RE-ENABLE RCS AFTER FAIRING SEP	247.84	124.583	35.758	-72.463	3866.966
FAIRING SEP DETECTION	248.34	124.904	35.746	-72.448	3866.185
DISABLE RCS FOR INTERSTAGE SEP	250.76	126.431	35.692	-72.373	3862.461
STAGE 1/2 INTERSTAGE SEPARATION	250.84	126.481	35.69	-72.371	3862.34
STAGE 2 TVC ENABLE	257.84	130.671	35.533	-72.156	3852.16
STAGE 2 IGNITION	258.34	130.957	35.521	-72.141	3851.46
STAGE 2 TAIL-OFF	412.31	196.067	30.535	-66.065	7470.79
STAGE 2 COAST	420.7	195.99	30.136	-65.626	7526.624
ORIENT FOR PAYLOAD SEP	430.7	195.859	29.657	-65.107	7528.248
DISABLE RCS FOR PAYLOAD SEP	540.62	194.9	24.251	-59.716	7532.254
PAYLOAD SEPARATION	540.7	194.9	24.247	-59.712	7532.255
RE-ENABLE RCS AFTER PAYLOAD SEP	542.7	194.892	24.146	-59.619	7531.72
ORIENT FOR CCAM	543.7	194.888	24.096	-59.572	7531.759
CONTAMINATION/COLLISION AVOIDANCE MANUEVER	840.7	197.833	8.61	-47.065	7528.292
RCS TANK DEPLETION	960.7	201.371	2.184	-42.448	7523.255
POST RCS BLOWDOWN COAST	1050.7	204.867	-2.645	-39.024	7518.982
END OF MISSION	1060.7	205.298	-3.181	-38.643	7518.459

Event	Antares OA-5 Window Close				
	Time (sec)	Altitude (km)	Latitude (deg N)	Longitude (deg E)	Velocity (m/s)
STAGE 1 IGNITION	0	-0.01	37.834	-75.488	0
STAGE 1 THROTTLE DOWN	189.79	78.271	36.937	-74.262	3087.155
STAGE 1 SHUTDOWN	214.75	99.488	36.419	-73.589	3908.678
STAGE SEPARATION	220.75	104.577	36.277	-73.407	3914.563
ENABLE RCS	222.25	105.81	36.242	-73.362	3911.902
ENABLE PEG STEERING	226.75	109.417	36.136	-73.227	3903.157
DISABLE RCS FOR FAIRING SEP	245.56	122.986	35.69	-72.67	3870.179
FAIRING SEPARATION	245.84	123.169	35.684	-72.661	3869.732
RE-ENABLE RCS AFTER FAIRING SEP	247.84	124.465	35.636	-72.603	3866.602
FAIRING SEP DETECTION	248.34	124.785	35.624	-72.588	3865.822
DISABLE RCS FOR INTERSTAGE SEP	250.76	126.308	35.567	-72.517	3862.11
STAGE 1/2 INTERSTAGE SEPARATION	250.84	126.357	35.565	-72.515	3861.989
STAGE 2 TVC ENABLE	257.84	130.532	35.399	-72.311	3851.843
STAGE 2 IGNITION	258.34	130.818	35.387	-72.296	3851.147
STAGE 2 TAIL-OFF	412.31	194.285	30.278	-66.375	7472.183
STAGE 2 COAST	420.7	194.206	29.878	-65.939	7528.219
ORIENT FOR PAYLOAD SEP	430.7	194.075	29.398	-65.422	7529.85
DISABLE RCS FOR PAYLOAD SEP	540.62	193.12	23.977	-60.055	7533.852
PAYLOAD SEPARATION	540.7	193.119	23.973	-60.051	7533.852
RE-ENABLE RCS AFTER PAYLOAD SEP	542.7	193.112	23.872	-59.959	7533.317
ORIENT FOR CCAM	543.7	193.108	23.822	-59.912	7533.356
CONTAMINATION/COLLISION AVOIDANCE MANUEVER	840.7	196.152	8.312	-47.439	7529.768
RCS TANK DEPLETION	960.7	199.762	1.881	-42.824	7524.64
POST RCS BLOWDOWN COAST	1050.7	203.32	-2.949	-39.399	7520.28
END OF MISSION	1060.7	203.759	-3.485	-39.017	7519.747