Plane:	X-15-1	Date:	10/7/63
Flight:	1-39-63	T.O.:	1122
Pilot:	Capt. Joe Engle	Launch:	1223
B-52:	#008	Land:	1231
		Total:	:08
		B-52 Land:	1300

12 minutes to launch

Engle:	OK, Bob, are you ready to start APU's again?
NASA 1:	Standby.
B-52:	ll minutes.
NASA 1:	Roger.
Engle:	Helium shutoff valve is open and let me know when you want to start APU's again.
NASA 1:	OK, Joe, we'll be doing it by the old list, at 9 minutes for the helium shutoff valve open and on to the starting of the APUs.
Engle:	OK, helium shutoff valve coming closed.
NASA 1:	Would you move the control surface a little bit to bleed off for the pressure on #2?
Engle:	You bet! I'm still on external stable platform, Bob.
NASA 1:	Right.
B-52:	10 minutes now.
NASA 1:	Roger, 10 minutes. Jack Russell, we're going through the checklist now, with Joe, and would you pick up your calls as they come along? APU pressure switch is normal, Joe?
Engle:	That's affirmative.
NASA 1:	Both blowers, blowers & LN2.
Engle:	Blowers BLN2, pressure cooling on.
NASA 1:	Roger.
Russel:	LN2 is off.
NASA 1:	Understand it's off.
Engle:	Inertial gages are 1000 on inertial speed. Slightly descent on 44,500 on altitude. Attitude looks good and α is reading OK now, still on external.
NASA 1:	OK. Helium shutoff valve switch open, go ahead with the APU's.
Engle:	Roger. Shutoff open. Data is on. #2 APU coming on.
B-52:	9 minutes.
NASA 1:	Leave the data off, Joe.

Engle:	Understand data off. #1 APU coming on.
NASA 1:	#2 first?
Engle:	That's already fired up! Reset the generators.
NASA 1:	Roger.
Engle:	Engine reset. Hydraulic pressure are both about ..... Controls and flaps coming down on the .....
NASA 1:	Roger.
Chase:	All set. Flaps coming down.
Engle:	Coming back up.
Engle:	Coming up. Flaps up.
Engle:	Circuit breakers are in.
NASA 1:	Very good. Keep going, Joe.
Engle:	Mixing chamber temperatures are -40 on #1 and #2. α is still reading good and β is about 1 needle heads off to the left.
NASA 1:	Roger. Chase 3, is your fuel OK for this?
Chase 3:	Yes, I have 3000 pounds.
NASA 1:	OK.
B-52:	8 minutes, starting turn.
NASA 1:	Roger.
Engle:	Aux cabin pressure switch is on.
NASA 1:	Roger. Russell, we'll use the same numbers on the lake check, 140 north and 50 east. What is your α now, Joe?
Engle:	α looks good and I'm going through SAS check now.
NASA 1:	Roger. Fire extinguisher was auto?
Engle:	..... and still is.
NASA 1:	Roger.
Russel:	Lube oil temp 115.
B-52:	7 minutes.
NASA 1:	Roger. What is your α reading, Joe?
Engle:	About 1.5.

NASA 1:	OK.
Engle:	SAS check complete. On HI and alternate SAS is on. Horizontal stab is ZERO position.
NASA 1:	Very good.
B-52:	6 minutes.
Engle:	On X-15 oxygen now and got 2600. Cabin altimeter is 3600 and blood pressure switch is still on. And my source tank indicated about 50, ammonia about 47. Going to pressurize.
NASA 1:	Roger.
Russel:	Platform is in specs.
NASA 1:	Roger. Joe, we will not repeat the jettison check.
Engle:	Understand.
NASA 1:	008, can you tighten up your turn just a little?
B-52:	Roger. 5 minutes.
NASA 1:	Roger, we will give you another check at 4 minutes, looks like we will be adding 15 seconds. Joe, we are going to skip the next 3, 4, 5 items. Are you on interphone?
Engle:	Roger.
NASA 1:	Go to radio.
Engle:	I'm on radio now, how do you hear?
NASA 1:	Read you loud and clear, how do you hear me?
Engle:	Very good, how about that!
NASA 1:	How about that!
B-52:	Around 4 minutes, standing by, anytime check.
NASA 1:	Roger, standby for 4 minute check. Joe, aux cabin pressure switch on?
Engle:	Roger, it's on.
NASA 1:	And we are at 4 minutes. Disregard that 4 minutes, we'll be another 15 seconds. 4 minutes now.
Engle:	Roger, 4 minutes.
B-52:	4 minutes, crossing 212°.
NASA 1:	Roger, standby to mark, Jack. Mark, now.
Russel:	Got it.
B-52:	3 minutes.

NASA 1: Roger, 3 minutes.

Engle: Velocity is 950 and attitude looks good. #l APU bearing is 80, #2 is 30. Roger.

NASA 1: Jack, standby to mark. Mark.

Russel: Mark.

NASA 1: 008, turn to 210°.

B-52: 210°. 2 minutes and 210°.

NASA 1: Joe, go ahead with your 2 minute point.

Engle: Roger. Data on, tape back to 15. Cine camera pulse. Push to test ball nose.

NASA 1: What's your α and β reading now? α is reading about 1.5 and β is 1 needle to the left.

NASA 1: Roger. Go to 212°, 008.

B-52: 212° and 2 minutes.

NASA 1: This is one minute.

B-52: Correction, 1 minute.

NASA 1: We're going on your count now, Joe.

Engle: Roger, understand, let's make it 45 seconds now. Going to prime.

NASA 1: Very good.

Engle: Ignition ready and precool. Igniter idle.

NASA 1: Roger, Joe. Your ready light is on.

Engle: 15 seconds, pump idle. ..... is 175 and manifold pressures look good. Check, Bob?

NASA 1: Roger, we have good readings.

Engle: OK, I'll see you in a few minutes, 3, 2, 1, launch!

Chase: Good lite.

NASA 1: Looks good, Joe. Everything looks real good, Joe.

Engle: OK, coming back to 1/2 g, my α is inoperative again.

NASA 1: Roger, pull it up Your profile is looking good. You should be on α and just hold that now. Good profile, Joe. 66, 67, 68, pushover.

Engle: Pushover. Brakes coming out now.

NASA 1: OK. 88, 89, 90, hold your altitude now, Joe. Hold your altitude. About 5° on your theta. Pull it up just a little bit, looks real good. I'll give you the count on the shutdown but shutdown on your velocity.

Engle:	Roger, shutting down now, I'm 4000.
NASA 1:	OK. Speed brakes in. Very good profile, Joe. Turn right about 5° when you get a chance. Bank 5° if you can, Joe.
Engle:	Roger, I'm turning.
NASA 1:	Very good profile, Joe. Now start your turn back to your original heading. Left about 5° and you've got about 10 miles to come wings level. Hold your nose up. OK, wings level now all the way. OK, you've gone by Pilot Knob.
Engle:	Roger, indicating 72 and about 3200 feet, going to land position.
NASA 1:	OK. Little bit high on energy but not bad at all. You can start down and pick up about a -400 on inertial velocity. You're at Cuddeback and what's your velocity, Joe?
Engle:	I'm about 2800.
NASA 1:	OK, looks very good. Beautiful profile. OK, I think you can bring speed brakes in right now, Joe.
Engle:	OK.
Chase:	Coming on with your turn, Joe.
Engle:	0K.
NASA 1:	Engine master off?
Engle:	Engine master off. Going to center stick.
NASA 1:	OK, got the base in sight?
Engle:	Rog.
NASA 1:	Understand you did change your trim switch?
Engle:	Yes, ... it is operating.
NASA 1:	OK, you should be going subsonic right about now.
Engle:	Roger. I'm coming through ..... about 1.8 now. And I've got 350 indicated and about 35,000. Correction, about 33,000.
NASA 1:	OK, go to jettison, Joe, and you should be crossing the highway now.
Engle:	Roger.
NASA 1:	He's at high key. Chase 3, he's at high key now.
Chase:	Roger, I have him.
NASA 1:	Do you have him in sight?
Engle:	Coming through 30,000.
NASA 1:	OK check your squat and flap circuit breakers in.

Engle:	Roger, squat circuit breakers coming on, flaps are up, and circuit breakers are in.
NASA 1:	OK, you got a good pattern. Have you picked him up, Chase 3?
Chase:	Negative, Bob.
NASA 1:	He will be turning on the downwind shortly.
Engle:	I'm right up about north Eddy now, coming through 20,000.
Chase:	I got you!
Engle:	I'm decreasing speed now, using a little speed brakes.
NASA 1:	OK, Joe, you can go back to pressurize.
Engle:	Going to pressurize.
NASA 1:	Give him an altitude check when you get to him, Henry.
Chase:	Very well.
Engle:	10,000 now, Bob, 9000 now.
NASA 1:	Roger.
Engle:	Flaps coming down now.
NASA 1:	OK. About ready for the gear?
Engle:	Not yet.
Chase:	You're about 15 feet high, Joe.
Engle:	Right.
NASA 1:	Gear.
Engle:	Gear coming down.
Chase:	And they're all down, about 3 feet, 2, 1, real nice!
NASA 1:	Speed brakes out, Joe?
Engle:	Yes, I have.
NASA 1:	You can control it with rudder now. Move the stick over and see what happens to it.
Engle:	I have it all the way over now, I'm indicating about 80 knots.
NASA 1:	OK, that's about the end of it.
Engle:	OK. Hold it down center pretty good.
NASA 1:	How about that!

Engle: How about that! My heading is 180°. Zero on inertial climb. Velocity is zero now. X-15 oxygen is 1800. Flaps coming up, speed brakes coming back up, ball nose test. Data is off. Hydraulic pressures are about 3400. Peroxide pressure is 800. APU bearing temperatures, #l is 100, #2 is 30. Low lite is not on. Mixing chamber temperatures are -30 and -30. Engine source #l is 1800 and #2 is 1800. APU source is 21 on #l and #2 is 24. Cabin source is 2250. Speed brakes coming closed and platform going off.