

A LLO 13 AIR-TO-GROUND VOICE TRANSCRIPTION

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03 17 58 23	CC	Aquarius, Houston. Over.
03 17 58 29	CDR	Go ahead, Houston.
03 17 58 31	CC	Hi, Jim. We've got a flight handover in about 2 minutes, and we'll have a temporary loss of COMM. You don't need to switch antennas. Over.
03 17 58 42	CDR	Okay; fine.
03 18 00 56	CC	Aquarius, Houston through Madrid for a COMM check. How do you read?
03 18 01 02	CDR	Loud and clear, Joe. How me?
03 18 01 05	CC	Okay, Jim.
03 18 06 38	CDR	... asleep?
03 18 06 46	CMP	I ... Maybe ...
03 18 06 57	CDR	They have got a procedure for ... the lithium hydroxide ...
03 18 07 16	CDR	... on secondary. We'll let it go to 15. Why don't you get on a headset, and I'll be down ... for ...
03 18 07 37	CDR	Houston, Aquarius.
03 18 07 41	CC	Aquarius, Houston. Go ahead.
03 18 07 46	CDR	Okay. Jack's up with me now and you all ... procedure for making these lithium hydroxide devices, and soon as he gets on his helmet, he'll be ready to copy, and then he'll get started making one.
03 18 08 05	CC	Roger that, Jim. Understand - -
03 18 08 07	CDR	On second thought -
03 18 08 09	CC	Go ahead.
03 18 08 13	CDR	I'll give Jack the headset for a while and he'll copy down your instructions.
03 18 08 30	CC	Okay, Jim. I didn't copy your second thought. Over.

03 18 08 38 CDR I'll give Jack the headset and let him copy the instructions.

03 18 08 43 CC Okay, Jim. The way I thought it might be best to do it would be to have you gather the equipment and let us talk you through your procedure while you do it. Now, maybe you could give Jack the headset and - and - get the equipment together, and we'll talk you through the procedure. I think it'll be a little easier to do that way than if you tried to copy it all down - and then go do it.

03 18 09 11 CDR Okay. Do you have any equipment listed? I'll just get it and give it to him and I can just sit here where I am.

03 18 09 17 CC Okay. I think the equipment you'll need will be two command module lithium hydroxide canisters, a roll of the gray tape, the two LCGs, because we're going to use the bags from the LCGs, and one - one LM cue card - one of those cardboard cue cards which you will cut off about an inch and a half out from the ring. Now, I think that's all we'll need. Over.

03 18 10 03 CDR Okay. ... Okay, Houston.

03 18 10 23 CDR Hello, Houston.

03 18 10 25 CC Go ahead, Jim.

03 18 10 28 CDR Okay. That's two lithium hydroxide canisters, one roll of that special gray tape, two LCGs which we're going to use the bags from, one LM cue card and ...

03 18 10 53 CC Okay. That's affirmative, Jim. If you'll just cut the cue card, which is a handy piece of stiff paper the right size, about an inch and a half from the rings. Just cut off the ring holes, in other words, and you'll have a card about 11 inches long and probably 6 inches wide, something like that.

03 18 11 19 CDR Okay, ... I'll have Jack gather up the stuff.

03 18 11 22 CC Okay.

03 18 11 28 CDR ... that roll of gray tape.

03 18 11 34 CMP ... Okay. ... and ... plastic bags.

03 18 11 48 CDR Yes. Bring it down here. One LM cue card. I get that.

03 18 20 14 CMP Okay. I got the canisters.

03 18 20 24 CDR ...

03 18 20 38 CMP ...?

03 18 21 16 CMP ...

03 18 21 26 CDR Okay, Houston; Aquarius.

03 18 21 32 CC Yes. Aquarius, Houston. Go ahead.

03 18 21 37 CDR We have gathered the materials, and I can put Jack on the headset and he can copy the instructions ... do you see any need for - or should I copy it to give them to him, or do you think they're too detailed?

03 18 21 55 CC Why don't you put him on the headsets, Jim, and I'll read it out to him.

03 18 22 02 CDR Okay.

03 18 22 30 CMP Okay, Joe.

03 18 22 33 CC Okay, Jack. Did anybody ever tell you that you got a 60-day extension on your income tax. Over.

03 18 22 42 CC Yes. I think - I think somebody said that when you are out of your country, you get a 60-day extension.

03 18 22 50 CC Okay; right. Okay. I'm ready to start into the procedure. When you answer me back, speak up - speak up into the microphone, because our downlink is pretty noisy. The first thing we want you to do, and we'll do this on one canister, and then let you go ahead and repeat it on the second. So take one of the LCGs and cut off the outer bag. By cutting along one the heat seals; do it carefully and close to the heat seal, because we may have to use the outer bag if we damage the inner bag. So go ahead and do that, and then we'll do the next step.

03 18 23 37 CMP Okay. Take an LCG, cut the outer bag by the heat seal. Be careful not to damage the inner bag. Right?

03 18 23 46 CC Right. Just cut along one side.

03 18 24 50 CMP Hey, Houston, Odyssey - or Aquarius. We've done that.

03 18 24 55 CC Okay, Jack. Now - now remove the inner bag from the outer bag, and cut the inner bag, also, along one of the heat seals down one side.

03 18 25 15 CMP Okay. Remove the inner bag from the outer bag, cut the inner bag along the heat seal along one side.

03 18 25 22 CC Okay. That's correct. Do that, and report.

03 18 26 20 CMP Okay, Joe. We've got that done.

03 18 26 22 CC Okay, Jack. Now you can put the LCG itself; that is, take it out of the inner bag, put it in the outer bag, and stow it some place; we recommend U-1, but you can stow it wherever it's convenient.

03 18 26 40 CMP ... outer bag ... and stow it back in ...

03 18 26 48 CMP Okay, Joe. We've got that.

03 18 26 50 CC Okay. Now pick up one of the lithium hydroxide canisters, and let me describe which end is which. It's approximately square on one - one of the vented flat ends, has the strap, and that end we call the top, the end opposite we call the bottom. Is that clear? Over.

03 18 27 21 CMP Right.

03 18 27 34 CMP Okay. I've got it, Joe.

03 18 27 37 CC Okay. Now then, we're - we want you to take the tape and cut out two pieces about 3 feet long, or a good arm's length, and what you're - what we want you to do with them is to make two belts around the sides of the canister, one belt near the top and one belt near the bottom, with the sticky side out; wrap it around, sticky side out, as tight as possible. It'll probably take both of you to get it nice and snug. Over.

03 18 30 01 CMP Okay, now -

03 18 30 15 CMP Okay. Now we've got to make the belt real taut here.

03 18 30 23 CDR How's that?

03 18 30 35 CMP Real tight. And then ...

03 18 33 13 CMP Okay, Joe.

03 18 33 18 CC Okay, Jack. Did you have - -

03 18 33 19 SC - - Hey, Houston, are you reading?

03 18 33 24 CC Jack - -

03 18 33 25 CMP - - We've got the two belts around the top and the one around the bottom all done.

03 18 33 30 CC Okay, fine. The next step now is to anchor that tape, and the way we want you to do that is to cut about a 2-foot length off the roll and then tear it lengthwise so that you have two strips about 2 feet long and about a half an inch wide. And you'll wrap those around the canister at right angles, more or less, to the tape that you've got so that it goes across the top and across the bottom; and when it goes across the top and the bottom, put it so that it's outboard of the center hole and try to get it over one of the ridges between the screens, so that it won't block the flow. Is that clear? Over.

03 18 34 15 CMP Yes, Joe. Very good.

03 18 34 17 CC Okay. Press on.

03 18 34 22 CMP Okay. I've got a cut length right here and we'll tear it lengthwise ... and I'm going to go around right here at this ridge all the way around at right angles and anchor it ...

03 18 34 43 CMP Yes.

03 18 34 46 CMP Joe, just to clarify that, sticky end down. Right? On the tape that I am putting on now?

03 18 34 54 CC I didn't quite copy that, Jack. Say again.

03 18 34 58 CMP Okay. That will be the sticky end down on the container, right?

03 18 35 05 CC Oh, that's correct. I forgot to say that. That's right.

03 18 35 33 CMP ... hold that one right here, if I can set it.

03 18 37 28 CMP Okay, Joe; Aquarius. We've got that done.

03 18 37 32 CC Okay, Jack. The next step is to get the EVA cue card and use it to form an arch over the top of the canister; just tuck one short end under one ridge on the top the other one against the ridge on the other side so that it forms a rounded arch over the top of the canister. You see, Jack, what we're going to do is slip the bag over this whole assembly and the cue card will serve to keep the bag from being sucked down against the screen. Over.

03 18 38 10 CMP Okay. I got the idea.

03 18 38 13 CC Okay. And when you've done that, to hold the arch in place, just run a strip of tape across the side of the - that is, across the top of the arch, and anchor it down to the sticky strips along each side.

03 18 38 31 CMP Okay. I got the idea. Okay. Let me just repeat it here. Take a cue card, form an arch over the top, bringing it under the side here. When we're through, run a piece of tape from the sides across the top of that to anchor to the other side.

03 18 38 51 CC That's correct.

03 18 38 56 CMP Okay. It worked.

03 18 39 00 CMP The top. ... Across the top.

03 18 39 18 CMP Looks like you're going to have to cut the cue card slightly.

03 18 39 32 CMP Doesn't have to be really ... over that the only thing we're ... we can just take the scissors and cut off the edge here. The only thing this does, Jim, is prevent this from being sucked down into the container.

03 18 40 28 CMP Still going to need some more tape. Cut off the end. Okay. Whack off the bottom. ...

03 18 43 34 CMP Okay, Joe. We've got that arch built, and it's all taped in securely.

03 18 43 41 CC Okay, Jack. The next step is to stop up the bypass hole, which is the hole in the center of the bottom of the canister; we want to stop that up because we don't want to bypass the flow; and I forgot to tell you to get something to stick in that hole. We recommend that you either use a wetwipe, or cut off a piece of sock and stuff it in there, or you could probably even crumble up some tape and use that. Over.

03 18 44 13 CMP Okay. We'll start plugging up the bypass hole.

03 18 44 17 CC Okay.

03 18 44 18 CMP Plug that hole. We can either - we can put some either - Let's cut a piece of your towel there.

03 18 44 27 CC Sounds good.

END OF TAPE

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03 18 47 14	CMP	Okay, Houston; Aquarius. We have the bypass hole all plugged up.
03 18 47 21	CC	Okay, Aquarius. The next step is take the inner LCG bag that you cut open, and slip it over the top of the canister, when you do that, orient it so that the ears of the bag, that is, the corners should stick out on the closed end - are oriented along the open ends of the arch, because we're going to snip one of those corners to stick the hose in. Pull it down until it fits snugly over the arch. Over.
03 18 47 56	CMP	Okay, Joe. Slip the bag over the canister so that the arch is at the bottom of the bag and that the ears are along oriented along, let's see - I guess it would be - would be at the sides of the arch.
03 18 48 19	CC	Depends on what you mean by sides - over the - the open ends of the arch.
03 18 48 26	CMP	Right, the open ends of the arch.
03 18 48 28	CC	Okay.
03 18 49 17	CMP	Okay, Joe. We've got that done.
03 18 49 20	CC	Okay. Now press the bag against the sticky belts that we put on the sides of the canister. If there is any excess material, just kind of pleat it, so that it makes a fairly tight seal, and then take another 3-foot strip of sticky tape and wrap it around the outside of the bag opposite the bottom - the bottom sticky belt - to make a nice tight seal.
03 18 49 50	CMP	Okay. I'll do it. Okay. Now they want two strips around here to make a tight seal.
03 18 52 38	CMP	Okay, Joe. We've got the canister inside the bag, two strips around the sides of the bag, real tight, and both sealed.
03 18 52 47	CC	Okay; real fine. Now there's probably a couple of inches of excess bag sticking out around the bottom of the canister. To prevent this from sucking in against the bottom screen, we'd like you to trim it off with the scissors, and when you've done that, we'd like you to cut two more

strips of tape about 12 inches long or so, cut the - tear them lengthwise to get four pieces 12 inches long and 1/2-inch wide, and then use those four strips to secure the bag by passing the strips from the sides of the canister outside the bag around the bottom of the canister and back up the other side, and when you do this, just as you did on the top, make them go outward of the hole and in between the screens. Over.

03 18 53 42 CMP Okay. You want me to trim the excess material that's sticking off here; trim it at the edge of that canister? Or do you want any excess left over?

03 18 53 52 CC No, you don't need to have any excess. Just trim it approximately level.

03 18 53 59 CMP Okay. Let's do that first.

03 18 54 01 CC Okay.

03 18 54 58 CMP Okay. Now, Joe, you want to cut four strips, 12 inches long each, 1/2-inch in diameter. Tape that along the outsides of the bag across the ribs.

03 18 55 15 CC That's correct, Jack. That's just for additional security on the bag. When you get those done, you'll have - You'll have two strips going one way, and the other two will be perpendicular to them.

03 18 57 58 CMP Okay, Houston; Aquarius. We've got the four strips in place.

03 18 58 03 CC Okay. We're in business now with the bag, and the next step to perform is to get ready to put the red suit hose, either the commander's or the LMP's because we're - we're going to want you to have both of these made up eventually, into the top of the - of the bag, and to do that you, first of all, have to assure that the - that the red hose is separated from the blue hose. I don't know whether this has been done already, but if it hasn't, what you have to do is cut the outer Beta-cloth sheath down the full length of the - of the hoses and then also cut the rubber ties that secure the two hoses together, and the hoses should come apart and the COMM cable should - should come off. Over.

03 18 59 04 CMP Okay. Take the - I'm going to want to separate the red hose from the blue hose by cutting this Beta-cloth sheath. Okay. That's in work.

03 18 59 15 CC Okay.

03 19 00 52 CMP Okay, Houston; Aquarius. I have the LMP's red hose separated from the others.

03 19 01 00 CC Okay. Real fine. Now the next step is to cut a diagonal hole in one ear of the - of the plastic bag near the arch. You can pick either one and cut about a 1-1/2 or 2 inch diagonal hole, big enough to slip the red hose through. And when you've done that, you'll just slip the red hose through so that it goes about to the center of the canister. It's - it's - It's not critical except that the opening should be down, and then lape the bag to the hose where it goes in so that it's nice and snug. Over.

03 19 01 40 CMP Okay. Copy that. We want a 1-1/2 inch hole right here at this ear, and put the hose in here, end down and toward the canister and then we tape the seal around here.

03 19 02 10 CMP Let's try it. We can always make it bigger if we have to. Fred, get those. ... the center of the arch.

03 19 02 52 CMP Got to - Got to come in towards the center, all the way to the center. No, no.

03 19 06 17 CMP Yes. I can't get those big knobs.

03 19 08 39 CMP ... All we have to do is ... tape around here ... tight fit. ...

03 19 10 16 CDR There it is right there.

03 19 10 18 CMP Okay, Houston; Aquarius.

03 19 10 20 CC Aquarius, Houston. Go ahead.

03 19 10 26 CMP Okay. Our do-it-yourself lithium hydroxide canister change is complete. Joe, the only thing different is that our arch on this piece of cardboard is not big enough to position the red hose with the inlet down, and the inlet - The inlet to - to the red hose is lying on its side, but I think it'll still work.

03 19 10 53 CC Okay, Jack. I concur. I think it'll work, too. There's one step that I omitted, which you can do now quite conveniently, and it's this. Where you stuff the towel in the bypass hole on the bottom, we recommend that you cut a few short pieces of tape and just tape that over so it doesn't fall out. Over.

03 19 11 17 CMP Okay. Will do. Jim, I've got one more little thing to do, and that's ... seal that top.

03 19 12 28 CMP Okay, Joe. That's done.

03 19 12 30 CC Okay, Jack. Now the remaining steps are simply suit-loop configuration steps to get this thing into full operation, and our ECS people want to hold off on that until the canister you're working on gets to 7.6 millimeters of mercury, which will probably be another 45 minutes or an hour - it - We're reading 4.7 now. So what we'd like you to do in the interim is to set up the second command module canister the same way you just did the first one, using the commander's hose, and get that all set and probably about that time it'll be time to - to switch over. For your information, when you've got that done and if you've had your breakfast and so on, the next thing I've got for you is a switch-configuration list for the command module, which will represent the - the powerdown, square-1 starting configuration for all our - our preentry checks. Over.

03 19 13 39 CMP Okay. We'll start setting up the commander's hose configuration the same as the IMP's hose. And I'll get - instead of - I guess you want me to use my launch ... - launch checklist which I'd ...

03 19 14 00 CC That's affirmative, Jack. What we have done is marked up the lift-off configuration checklist, and we'll run through it whenever you get around to it.

03 19 14 11 CMP And, I assume that ...

03 19 14 38 CMP What I'd better do is before I put this thing back in operation, they're going to complete that other canister. I don't know. It should be in operation now. ...

03 19 15 05 CMP Okay, Houston; Aquarius.

03 19 15 07 CC Aquarius, Houston. Go.

03 19 15 12 CMP Okay, Joe. Should this canister be in operation now because it's already mounted on the hose?

03 19 15 17 CC Well, yes. We haven't completely configured the suit loop to get full flow through there, and it's okay the way it is. What I recommend you do with the commander's hose is get the bag all ready, but not stick the hose in until we call you on it. Okay.

03 19 15 39 CMP Okay. Will do.

03 19 16 45 CMP It won't go around?

03 19 17 04 CMP Yes. Or else a strip of tape.

03 19 17 55 CMP Okay, Jim. We've got to start setting up the commander's. ...

03 19 18 22 CDR You can get one of the cards, and I'll start cutting the ... bag.

03 19 20 33 CMP Yes. ... show. How about that ... because I've got two in my ...

03 19 20 52 CMP Yes. Here, we'll store them back where I got it.

03 19 21 06 CC Hello, Aquarius; Houston.

03 19 21 10 CMP Go ahead.

03 19 21 11 CC Roger, Jack; Tom here. Just thought I would pass on to you and Jim that got a little data priority going today, and going to convene to CPCB and we'll have you all kinds of good procedures for later on. Over.

03 19 21 24 CMP Okay. Thank you, Tom. You guys are really working overtime.

03 19 21 29 CC We're getting a little coordination down here.

03 19 21 41 CC Aquarius, Houston. You might pass on to Jim, he had such a long day yesterday, we thought we were going to have to play him some guitar music to get him to sleep last night. Over.