

Air traffic control communication at Portland International Airport July 1, 1990

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Introduction

This report contains a transcript of radio communications between air traffic controllers and pilots. The transcript was prepared as part of the ATC Interaction Research Project (AIR Project) at the Oregon Graduate Institute, which has been investigating computational representations of Air Traffic Control (ATC) communication.

This transcript covers 30 minutes of the radio communications of one controller in the Portland International Airport (PDX) Terminal Radar Control (TRACON) Facility. The controller was working one of the two approach positions; that is, he was responsible for aircraft entering and leaving a portion of the PDX Approach Radar Service Area (ARSA).

The transcript was made from a recording taped from radio at a site approximately two NM from the airport on July 1, 1990, between 10:45 and 11:15 AM. A copy of this recording on cassette may be obtained by writing to the Department of Computer Science and Engineering of the Oregon Graduate Institute. The recording exhibits high-frequency cutoff and high noise levels, however, so it may not be suitable for direct use with speech recognizers.

The transcript is in two parts. The section entitled “Full Transcript” depicts all exchanges chronologically as they occurred. However, air traffic control dialogue can be viewed as many interleaved yet fairly independent conversations, so in the “Separated Transcripts” section utterances are grouped by aircraft to show the course of each individual conversation. The utterance numbers from the full transcript are preserved in the separated transcripts so that the utterance context may be located easily.

The notation and transcription conventions used in these transcripts are described in Appendix A. A glossary of local terms may be found in Appendix B. Appendix C contains charts describing the airspace around Portland International Airport.

Full Transcript

- (1) Unknown: (-forty) five.
- (2) Approach: Horizon sixty four turn right heading one two zero.
- (3) Horizon 64: Turn right one two zero Horizon sixty four.
- (4) Horizon 391: Horizon uh, three ninety one (uh we'd like to) uh join the localizer.
- (5) Approach: Horizon three ninety one turn right heading three one zero join the localizer.
- (6) Horizon 391: Three one zero. (Three) ninety one.
(.)
- (7) Approach: Horizon three ninety one you're eight miles from uh, Laker maintain three thousand till established localizer cleared ILS two eight right approach.
- (8) Horizon 391: Cleared the ILS, two eight right approach three thousand till establish. Horizon Air three ninety one.
- (9) Approach: -ska two oh five turn left heading three two zero.
- (10) Alaska 205: Three two zero, Alaska two oh five.
- (11) Approach: Alaska six zero four reduce speed to one five zero until Laker and contact tower one one eight point seven.
- (12) Alaska 604: Slowing to uh one fifty and uh, tower uh, eighteen seven for Alaska six zero four.
- (13) Approach: Horizon three ninety one maintain one seven zero knots until Laker.
- (14) Horizon 391: One seventy till Laker, Horizon three ninety one.
- (15) Approach: Horizon sixty four turn: correction uh, continue on your present heading.
- (16) Horizon 64: ((garbled))
(.)
- (17) Unknown: ((Mike depressed))

- (.)
- (18) Horizon 391: Horizon three ninety one has the field in sight.
- (19) Approach: Horizon three ninety one roger cross abeam of Laker at or above, two thousand, you're cleared for the visual approach runway two eight left.
- (20) Horizon 391: Laker at or above two thousand, cleared the visual to the left, roger three ninety one.
- (21) Approach: Alaska two zero five (practical) increase speed to one niner zero until Laker.
- (22) Alaska 205: Alaska two oh five reduce- uh increasing.
- (23) Approach: Delta seven forty five turn right heading two eight zero, join the localizer.
- (24) Delta 745: Right two eighty, join the localizer, Delta seven forty five.
- (.)
- (25) Horizon 391: Three ninety one, can we pick it up, (just a) little bit.
- (26) Approach: Horizon three ninety one, uh that's approved.
- (27) Horizon 391: Horizon three ninety one, (roger).
- (.)
- (28) Unknown: ((Mike depressed))
- (29) Unknown: ((squawk))
- (30) Approach: ((garbled)) zero papa service terminated squawk twelve hundred, frequency change approved.
- (.)
- (31) Approach: Horizon sixty four turn left heading zero, six zero.
- (32) Horizon 64: Zero six zero, Horizon, uh, sixty four.
- (33) Approach: Alaska two oh five, nine from Laker, maintain three thousand till established on the localizer cleared the ILS two eight right approach, maintain speed (of) one eight zero until Laker.

- (34) Alaska 205: Roger Alaska two oh five, uh, cleared approach three thousand till established on the localizer at three thousand, and uh hundred 'n uh ninety till Laker?
- (35) Approach: Alaska two zero five, uh turn left heading two five zero now to join the localizer and maintain three thousand till established on the localizer, cleared ILS two eight right approach, maintain speed one eight zero until Laker.
- (36) Alaska 205: Roger one eighty, till Laker Alaska two oh five copy the rest.
- (37) Approach: Horizon sixty four turn left heading three one zero join the localizer.
- (38) Horizon 64: Three ten and join Horizon sixty four.
(.)
- (39) Approach: Tingle one (four eight) Portland Approach, r:oger, fly your present heading and reduce speed to two one zero.
(.)
- (40) Approach: Tingle one (four eight) thank you.
- (41) Approach: Delta seven forty five descend and maintain four thousand five hundred.
- (42) Delta 745: Down to four thousand five hundred Delta seven forty five.
- (43) Approach: Horizon, uh disregard.
(.)
- (44) Approach: Delta seven forty five is one zero miles from Laker, maintain four thousand five hundred till established on the localizer, cleared ILS two eight right approach, maintain speed one, seven zero until Laker.
- (45) Delta 745: One seventy till Laker forty five hundred (descending fifty seven) uh, ILS twenty eight right Delta seven forty five.
(.)

- (46) Approach: Tingle one (four eight) roger there's three of them out there from your uh, ten-o'clock all the way to your eleven thirty on the ILS approach uh, you can expect vectors behind them.
(.)
- (47) Approach: Alaska two zero five contact tower one one eight point seven over the Laker.
(.)
- (48) Alaska 205: Alaska ((cough))- Alaska two oh five roger.
- (49) Approach: Horizon sixty four do you still have the airport?
- (50) Horizon 64: Uh, not now, Horizon sixty four.
- (51) Approach: Horizon sixty four roger. Present heading join the localizer, descend and maintain four thousand five hundred.
- (52) Horizon 64: Present heading, join, forty five hundred, Horizon sixty four.
(.)
- (53) Approach: (November) four three juliet radar services terminated and squawk one two zero zero frequency change approved.
(.)
- (54) Horizon 182: Portland Approach Horizon one eighty two seven thousand descending six thousand heading one zero zero speed (sixty) uh hundred and seventy knots.
- (55) Approach: Horizon one eighty two Portland Approach roger.
- (56) Unknown: Tingle one (four eight) turn left heading zero six zero.
(.)
- (57) Horizon 64: Horizon sixty four cleared for the approach?
- (58) Approach: Horizon sixty four you're: one zero miles from Laker, maintain four thousand five hundred till established on the localizer cleared ILS two eight right approach,

- maintain one seven zero knots until
Laker.
- (59) Horizon 64: ((Garbled)) Laker forty five hundred
(feet) cleared for the approach, Horizon
sixty four.
- (60) Approach: Six four caution wind turbulence you're
five miles (in) trail of a seven twenty
seven.
- (61) Unknown: ((Mike depressed))
- (62) Approach: Alaska two zero five contact tower one
one eight point seven.
- (63) Approach: Delta seven forty five contact tower one
one eight point seven over (the) Laker.
- (64) Delta 745: Tower at Laker, Delta seven forty five.
(.)
- (65) Approach: Tingle one (four eight) you'll be
following traffic eleven-o-clock at five
miles a metroliner at four thousand five
hundred on the localizer.
(.)
- (66) Approach: Tingle one (four eight) turn left heading
zero three zero.
(.)
- (67) Horizon 64: A:pproach Horizon sixty four has uh,
airport in sight, looking for a visual to
the left.
- (68) Approach: Horizon sixty four roger, cross abeam of
Laker at or above two thousand, cleared
visual approach runway two eight left.
- (69) Horizon 64: At abeam of Laker two thousand, visual to
the left Horizon sixty four.
- (70) Approach: Tingle one (four eight) turn left heading
three two zero join the localizer.
(.)
- (71) Approach: Tingle one (four eight) descend and
maintain four thousand five hundred.
(.)

- (72) Approach: Horizon one eighty two turn left heading zero one zero, descend and maintain four thousand five hundred.
- (73) Horizon 182: Four thousand five hundred left heading zero one zero, Horizon one eighty two.
(.)
- (74) Approach: Horizon one eighty two continue left turn heading of uh three four zero.
- (75) Horizon 182: Three four zero Horizon one eighty two.
- (76) Delta 1443: Portland Approach, Delta fourteen forty three, six thousand seven hundred, descending to five, foxtrot.
- (77) Approach: Fourteen forty three Portland Approach reduce speed to one seven zero.
- (78) Delta 1443: Go to one seven zero, Delta fourteen forty three.
- (79) Approach: Tingle one (four eight) is niner miles from Laker, maintain four thousand five hundred till established on the localizer cleared for ILS runway two eight right approach do not exceed two one zero knots.
(.)
- (80) Approach: Horizon one eighty two turn left heading three two zero join the localizer.
- (81) Horizon 182: Three two zero join (the) localizer Horizon one eighty two.
- (82) Ford 645: Portland Approach, Ford Trimotor niner six four five.
- (83) Approach: ((Garbled)) Portland Approach say again?
- (84) Ford 645: Ford Trimotor niner six four five we're squawking twelve hundred. We're uh just off Troutdale southbound we'd like to: make one circuit over the city, we're uh one thousand three hundred, then we'll be southbound to McMinnville.
- (85) Approach: Roger and uh say again the full call sign? I got the niner six and what was the last of it?

- (86) Ford 645: Niner six, four five.
- (87) Approach: Niner six four five is that it?
- (88) Ford 645: That is correct.
- (89) Approach: And what's your type aircraft niner six four five?
- (90) Ford 645: Uh we're a Ford Trimotor.
(.)
- (91) Approach: Ford uh, six four five squawk zero one zero five and ident remain outside the ARSA till radar identified.
- (92) Ford 645: OK.
- (93) Unknown: (Tingle) one (four eight) say again?
(.)
- (94) Approach: Tingle one (four eight) that is approved once you're inside the Laker, circle the runway two eight left and contact the tower on one one eight point or correction tower's on two five seven point eight.
(.)
- (95) Approach: Tingle one (four eight) contact tower now at two five seven point eight.
(.)
- (96) Approach: Horizon one eighty two one one miles from Laker maintain four thousand five hundred till established the localizer cleared ILS two eight right approach and if you'd like can increase to uh one niner zero until Laker.
- (97) Horizon 182: Horizon one eighty two (cleared to the approach) (garbled).
(.)
- (98) Approach: Ford uh, Trimotor six four five radar contact (four) southwest of Troutdale traffic at ten-o'clock, three miles northbound altitude indicates two thousand four hundred.

- (99) Ford 645: R:oger we're one thousand five and we're OK for over the city?
- (100) Approach: Trimotor uh six four five continue southbound for at least two more miles before proceeding over downtown.
- (101) Ford 645: OK, will do thank you niner six four five.
- (102) Approach: Delta fourteen forty three descend and maintain four thousand five hundred.
- (103) Delta 1443: Delta fourteen forty three clear to four thousand five hundred.
(.)
- (104) Approach: Delta fourteen forty three turn left heading zero two zero.
- (105) Delta 1443: Delta fourteen forty three heading, zero two zero.
(.)
- (106) Approach: Delta fourteen forty three turn left heading three five zero.
- (107) Delta 1443: Heading three five zero, Delta fourteen forty three.
(.)
- (108) Sun 512: Approach Sundance five twelve's with you at five thousand, one hundred on the heading one ninety on the speed.
- (109) Approach: Sundance five twelve Portland Approach roger.
(.)
- (110) Approach: Sundance five twelve maintain speed one seven zero.
- (111) Sun 512: One seven zero, Sundance five twelve.
(.)
- (112) Approach: Delta fourteen forty three turn left heading three one zero join the localizer.
- (113) Delta 1443: Delta fourteen forty three, three one zero join the local-.

- (114) Approach: Sundance five twelve turn left heading zero five zero.
- (115) Sun 512: Left zero five zero Sundance five twelve.
- (116) Approach: Ford Trimotor six four five contact approach one one eight point one.
- (117) Ford 645: Eighteen one, roger.
- (118) Horizon 182: Portland Approach Horizon, uh one eighty two visual (two eight left).
- (119) Approach: Horizon one eighty two roger contact tower one one eight point seven.
- (120) Horizon 182: ((Garbled)) (one eighty two).
- (121) Approach: Delta fourteen forty three you've got niner miles to Laker maintain three thousand till established on the localizer cleared ILS two eight right approach maintain one seven zero knots until Laker.
- (122) Delta 1443: Delta fourteen forty three, cleared for the ILS to two eight right and uh, maintain three thousand, till on the localizer.
- (123) Approach: Delta fourteen forty three that's correct and maintain one seven zero knots until Laker.
- (124) Delta 1443: Copy one seven zero knots till Laker Delta fourteen forty three, thank you.
(.)
- (125) Approach: Sundance five twelve turn left heading zero one zero.
- (126) Sun 512: Left zero one zero Sundance five twelve.
(.)
- (127) Approach: Sundance five twelve descend and maintain four thousand five hundred.
- (128) Sun 512: Four thousand five hundred, Sundance five twelve.
(.)
- (129) Expo 92: Portland Approach Expo nine two out of sixty five.

- (130) Approach: Expo nine two Portland Approach roger.
- (131) Approach: Sundance five twelve eight miles from Laker turn left heading three one zero. Maintain four thousand five hundred till established localizer cleared ILS two eight right approach, maintain one seven zero knots until Laker.
- (132) Sun 512: Three one zero uh four thousand five hundred we'll maintain uh, speed, (and cleared for the) ILS two eight right Sundance five twelve.
- (133) Approach: Expo nine two reduce speed to one seven zero descend and maintain four thousand five hundred.
- (134) Expo 92: One seven zero on the speed, and down to forty five.
(.)
- (135) Approach: Delta fourteen forty three traffic one-o'clock two miles maneuvering vicinity Troutdale altitude unknown.
- (136) Delta 1443: Fourteen forty three: looking.
(.)
- (137) Bonanza 64A: Portland Approach Bonanza three three six four alpha, three point five.
- (138) Approach: Expo nine two turn left heading zero two zero.
- (139) Expo 92: Zero two zero, Expo nine two.
- (140) Approach: Bonanza six four alpha Portland Approach roger.
(.)
- (141) Approach: Expo nine two turn left heading three six zero.
- (142) Expo 92: Three six zero Expo ninety two.
- (143) Approach: Delta fourteen forty three traffic no longer a factor contact tower one one eight point seven.
- (144) Delta 1443: Delta fourteen forty three.
(.)

- (145) Bonanza 64A: Portland Approach Bonanza three three six four alpha, request immediate lower traffic ILS maintain VFR over.
- (146) Approach: Bonanza six four alpha maintain at or above two thousand five hundred will that be uh low enough correction high enough (for you)?
- (147) Bonanza 64A: Think so, thank you very much.
(.)
- (148) Approach: Expo nine two you're niner miles from Laker turn left heading three one zero, maintain three thousand till established on the localizer, cleared ILS runway two eight right approach, maintain one seven zero knots until Laker.
- (149) Expo 92: That's two one, uh zero on the heading and, uh- one seven till Laker.
(.)
- (150) United 169: (United) one sixty nine Portland.
(.)
- (151) United 169: Portland Approach United one uh sixty nine with you out of nine seven with foxtrot.
- (152) Approach: United one sixty nine Portland Approach descend and maintain five thousand five hundred.
- (153) United 169: OK down to five thousand five hundred and uh what was (about the) speed?
- (154) Approach: Bonanza or correction United one sixty nine normal speed.
- (155) United 169: Normal speed down fifty five hundred, is that affirmed?
- (156) Approach: That's affirmative United one sixty nine.
- (157) Approach: Sundance five twelve contact tower one one eight point seven.
- (158) Sun 512: Five twelve good-bye.
(.)

(159) Approach: Bonanza six four alpha can you maintain VFR at two thousand five hundred.

(160) Bonanza 64A: Affirmative six four alpha.

(161) Approach: (Roger).
(.)

(162) Expo 92: Portland uh expo nine two.

(163) Approach: Expo nine two Portland.

(164) Expo 92: ((Garbled))

(165) Approach: Expo nine two contact tower one one eight point seven (and) request that (from them).

(166) Expo 92: One one eight-.

(167) Approach: On one one eight point seven affirmative, or uniform's two five seven point eight.
(.)

(168) Unknown: ((Mike depressed))
(.)

(169) Approach: Attention (all) aircraft ATIS Golf current at Portland, wind two niner zero at five altimeter three zero zero six.

(170) Approach: United one sixty nine fly heading two five zero join the localizer.

(171) United 169: Two five zero and join the localizer, United one sixty nine.

(172) Am 1139: Portland Approach American eleven thirty nine's with you descending to one zero thousand.
(.)

(173) Approach: American eleven thirty nine Portland Approach descend and maintain seven thousand.

(174) Am 1139: 'Kay uh, we're out of uh, one zero thousand for seven thousand, American eleven thirty nine.

(175) Approach: United one sixty nine descend and maintain four thousand five hundred.

- (176) United 169: Four thousand five hundred United one sixty nine.
(.)
- (177) Approach: United one sixty nine is one, one miles from Laker maintain four thousand five hundred till established on the localizer, cleared for ILS runway two eight right approach.
- (178) United 169: Forty five hundred till established for ILS two eight right for one uh, United one sixty nine, is that affirmed?
- (179) Approach: United one sixty nine, affirmative.
(.)
- (180) Approach: -Nanza six four alpha what speed can you maintain until Laker?
- (181) Bonanza 64A: ((Mike depressed)) Whatever you need six four alpha.
- (182) Approach: Six four alpha could you do at least uh hundred and fifty till Laker?
- (183) Bonanza 64A: Wilco, six four alpha.
- (184) Approach: Six four alpha, (thank you).
- (185) Approach: American eleven thirty nine reduce speed to two one zero (then) descend and maintain five thousand five hundred.
- (186) Am 1139: Two ten, five thousand, five hundred, American eleven thirty nine.
- (187) Approach: Bonanza six four alpha fly heading zero two zero maintain at least one five zero knots separator.
- (188) Bonanza 64A: Zero two zero, six four alpha.
- (189) Approach: Six four alpha caution wake turbulence you'll be following a Boeing seven fifty seven he's at twelve (over) your eleven-o'clock five miles descending out of three thousand eight hundred on the ILS.
- (190) Bonanza 64A: Roger six four alpha.

- (191) Sun 608: (Approach), Sundance six zero eight with you out of six thousand two hundred for five thousand.
- (192) Approach: Sundance six zero eight Portland Approach r:oger.
(.)
- (193) Approach: Bonanza six four alpha turn left heading zero one zero.
- (194) Bonanza 64A: Left (garbled) zero one zero six four alpha.
(.)
- (195) Approach: United one sixty nine contact the tower one one eight point seven over Laker, there's traffic off to your left a Bonanza will be following you. He's uh nine o'clock three miles.
- (196) United 169: United one sixty nine roger.
(.)
- (197) Approach: Bonanza six four alpha the: seven fifty seven's at twelve-o-clock at three miles.
- (198) Bonanza 64A: Six four alpha looking.
(.)
- (199) Approach: Sundance six zero eight reduce speed to two one zero and maintain five thousand.
- (200) Sun 608: Two one zero five thousand six oh eight.
- (201) Approach: American eleven thirty nine reduce speed to one niner zero and descend and maintain four thousand five hundred.
- (202) Am 1139: One ninety, four thousand five hundred American eleven thirty nine.
(.)
- (203) Bonanza 64A: Six four alpha has traffic in sight.
- (204) Approach: Bonanza six four alpha roger.
(.)
- (205) Approach: American eleven thirty nine (present) heading join the runway two eight right localizer.

(206) Am 1139: Eleven thirty nine, join two eight right.

(207) Approach: Bonanza six four alpha's five miles from Laker turn left three one zero maintain VFR cleared ILS runway two eight right approach.

(208) Bonanza 64A: Left three one zero six four alpha.

(209) Approach: Bonanza six four alpha maintain at least one five zero knots or greater until Laker.

(210) Bonanza 64A: (Wilco), six four alpha.
(.)

(211) Am 845: Portland Approach American eight forty five we're out of ten for seven.

(212) Approach: Eight forty five Portland Approach roger maintain seven thousand.

(213) Am 845: We shall maintain seven thousand.
(.)

(214) Approach: American eleven thirty nine one zero miles from Laker cleared ILS two eight right approach do not exceed one niner zero knots.

(215) Am 1139: Cleared for the approach not above one ninety American eleven thirty nine.

(216) Approach: Sundance six zero eight descend and maintain four thousand five hundred.

(217) Sun 608: Four thousand five hundred six oh eight.
(.)

(218) Approach: Bonanza six four alpha contact tower one one eight point seven.

(219) Bonanza 64A: Six four alpha.

(220) Approach: Sundance six zero eight turn right heading one six zero.

(221) Sun 608: One six zero Sundance six oh eight.
(.)

(222) Approach: Sundance six zero eight turn right heading one niner zero and descend and maintain three thousand.

(223) Sun 608: One nine zero three thousand Sundance six oh eight.
(.)

(224) Unknown: ((Mike depressed))
(.)

(225) Approach: American eight forty five reduce speed to two one zero and descend and maintain five thousand five hundred.

(226) Am 845: Reducing to two one zero and at five thousand five hundred.
(.)

(227) Sun 608: (Six oh eight) has the field in sight.
?9?9

(228) Approach: (Six zero eight) you're following an MD eighty at one-o-clock five miles at three thousand.

(229) Sun 608: In sight.

(230) Approach: (Sundance six zero eight) follow that traffic, caution wake turbulence, cross Laker at or above two thousand and cleared for visual approach runway two eight right.

(231) Sun 608: Cleared Laker two thousand behind the MD-80, (Sundance) six oh eight.
(.)

(232) Approach: American eleven thirty nine traffic to one moving twelve-o-clock two miles southbound altitude indicates one thousand.

(233) Am 1139: American eleven thirty nine traffic in sight.

(234) Approach: American eleven thirty nine roger and when you're over Laker contact the tower on one one eight point seven.

(235) Am 1139: Eighteen seven over Laker, good day, eleven thirty nine.
(.)

(236) Approach: American eight forty five fly heading two five zero, join the localizer.

(237) Am 845: Two five zero we'll join the localizer, American eight forty five.
(.)

(238) N769: ((Garbled)) seven six niner Portland.
(.)

(239) Approach: American eight forty five descend and maintain four thousand five hundred.

(240) Am 845: Four thousand five hundred American eight forty five.
(.)

(241) Approach: Sundance six zero eight contact tower one one eight point seven.

(242) Sun 608: So long.

(243) Approach: American eight forty five you're one one miles from Laker maintain four thousand five hundred till established on the localizer cleared ILS two eight right approach.

(244) Am 845: Ame:rican eight forty five, forty five hundred till established on the localizer cleared ILS two eight right approach.

(245) Approach: November eight zero seven six niner Portland Approach.

(246) N769: Roger we're r:with you.

(247) Approach: November seven six niner roger say your uh altitude reading and your requested altitude.

(248) N769: Right now at uh one thousand four hundred, with uh request to climb to four thousand.
(.)

(249) Approach: ((Beep)) seven six niner roger maintain VFR, climb to your requested altitude.

(250) N769: ((Garbled)) (Archer) seven six niner we'll be uh flying four thousand five hundred.

(251) Approach: (November) seven six niner, thank you.

(252) Horizon 9: Portland Approach Horizon niner, at niner thousand for six thousand heading one four five.

(253) Approach: Horizon niner Portland Approach roger.
(.)

(254) Approach: American eight forty five contact tower one one eight point seven over Laker.

(255) Am 845: One one eight seven.
(.)

(256) Approach: (November) seven six niner contact Portland Approach on one two seven point eight five.

(257) N769: Forty seven eighty five, seven six niner.
(.)

(258) Approach: Horizon niner turn right heading one seven zero.

(259) Horizon 9: Horizon niner one seven zero.
(.)

(260) Approach: Horizon niner descend and maintain four thousand five hundred.

(261) Horizon 9: Horizon niner four thousand five hundred.
(.)

(262) Approach: Horizon niner turn right heading two one zero descend and maintain three thousand.

(263) Horizon 9: Horizon niner two one zero at three thousand (garbled).

(264) Approach: Horizon niner turn final east of Laker at or above two thousand five hundred, (cross) abeam of Laker at or above two thousand, cleared visual approach runway two eight left.

(265) Horizon 9: Horizon niner final at or above two thousand five hundred abeam of Laker two thousand cleared for visual two eight left.
(.)

(266) (Tina) 79: Portland Approach (Tina) seven nine
(level five thousand).

(267) Approach: (Tina) seven nine Portland Approach
roger.

(268) Approach: Horizon niner uh is there still scattered
layers below you?

(269) Horizon 9: Uh, scattered layers right about five
thousand feet here, but its wide open
over the river.

(270) Approach: Horizon niner, thank you.
(.)

(271) Horizon 9: Uh, Portland this is Horizon niner,
basically it's uh clear west of
Troutdale.

(272) Approach: Horizon niner, thank you.
(.)

(273) Approach: Uh, niner contact the tower one one eight
point seven good morning.

(274) Horizon 9: Horizon ni-niner to the tower, good
morning.
(.)

(275) Unknown: ((Mike depressed))

Separated Dialogues

Alaska 205

- (9) Approach: -ska two oh five turn left heading three two zero.
- (10) Alaska 205: Three two zero, Alaska two oh five.
- (21) Approach: Alaska two zero five (practical) increase speed to one niner zero until Laker.
- (22) Alaska 205: Alaska two oh five reduce- uh increasing.
- (33) Approach: Alaska two oh five, nine from Laker, maintain three thousand till established on the localizer cleared the ILS two eight right approach, maintain speed (of) one eight zero until Laker.
- (34) Alaska 205: Roger Alaska two oh five, uh, cleared approach three thousand till established on the localizer at three thousand, and uh hundred 'n uh ninety till Laker?
- (35) Approach: Alaska two zero five, uh turn left heading two five zero now to join the localizer and maintain three thousand till established on the localizer, cleared ILS two eight right approach, maintain speed one eight zero until Laker.
- (36) Alaska 205: Roger one eighty, till Laker Alaska two oh five copy the rest.
- (47) Approach: Alaska two zero five contact tower one one eight point seven over the Laker.
- (48) Alaska 205: Alaska ((cough))- Alaska two oh five roger.
- (62) Approach: Alaska two zero five contact tower one one eight point seven.

Alaska 604

- (11) Approach: Alaska six zero four reduce speed to one five zero until Laker and contact tower one one eight point seven.
- (12) Alaska 604: Slowing to uh one fifty and uh, tower uh, eighteen seven for Alaska six zero four.

American 845

- (211) Am 845: Portland Approach American eight forty five we're out of ten for seven.
- (212) Approach: Eight forty five Portland Approach roger maintain seven thousand.
- (213) Am 845: We shall maintain seven thousand.
- (225) Approach: American eight forty five reduce speed to two one zero and descend and maintain five thousand five hundred.
- (226) Am 845: Reducing to two one zero and at five thousand five hundred.
- (236) Approach: American eight forty five fly heading two five zero, join the localizer.
- (237) Am 845: Two five zero we'll join the localizer, American eight forty five.
- (239) Approach: American eight forty five descend and maintain four thousand five hundred.
- (240) Am 845: Four thousand five hundred American eight forty five.
- (243) Approach: American eight forty five you're one one miles from Laker maintain four thousand five hundred till established on the localizer cleared ILS two eight right approach.
- (244) Am 845: Ame:rican eight forty five, forty five hundred till established on the localizer cleared ILS two eight right approach.
- (254) Approach: American eight forty five contact tower one one eight point seven over Laker.
- (255) Am 845: One one eight seven.

American 1139

- (172) Am 1139: Portland Approach American eleven thirty nine's with you descending to one zero thousand.
- (173) Approach: American eleven thirty nine Portland Approach descend and maintain seven thousand.
- (174) Am 1139: 'Kay uh, we're out of uh, one zero thousand for seven thousand, American eleven thirty nine.
- (185) Approach: American eleven thirty nine reduce speed to two one zero (then) descend and maintain five thousand five hundred.
- (186) Am 1139: Two ten, five thousand, five hundred, American eleven thirty nine.
- (201) Approach: American eleven thirty nine reduce speed to one niner zero and descend and maintain four thousand five hundred.
- (202) Am 1139: One ninety, four thousand five hundred American eleven thirty nine.
- (205) Approach: American eleven thirty nine (present) heading join the runway two eight right localizer.
- (206) Am 1139: Eleven thirty nine, join two eight right.
- (214) Approach: American eleven thirty nine one zero miles from Laker cleared ILS two eight right approach do not exceed one niner zero knots.
- (215) Am 1139: Cleared for the approach not above one ninety American eleven thirty nine.
- (232) Approach: American eleven thirty nine traffic to one moving twelve-o-clock two miles southbound altitude indicates one thousand.
- (233) Am 1139: American eleven thirty nine traffic in sight.
- (234) Approach: American eleven thirty nine roger and when you're over Laker contact the tower on one one eight point seven.

(235) Am 1139: Eighteen seven over Laker, good day,
eleven thirty nine.

Bonanza 3364A

- (137) Bonanza 64A: Portland Approach Bonanza three three six four alpha, three point five.
- (140) Approach: Bonanza six four alpha Portland Approach roger.
- (145) Bonanza 64A: Portland Approach Bonanza three three six four alpha, request immediate lower traffic ILS maintain VFR over.
- (146) Approach: Bonanza six four alpha maintain at or above two thousand five hundred will that be uh low enough correction high enough (for you)?
- (147) Bonanza 64A: Think so, thank you very much.
- (159) Approach: Bonanza six four alpha can you maintain VFR at two thousand five hundred.
- (160) Bonanza 64A: Affirmative six four alpha.
- (161) Approach: (Roger).
- (180) Approach: -Nanza six four alpha what speed can you maintain until Laker?
- (181) Bonanza 64A: ((Mike depressed)) Whatever you need six four alpha.
- (182) Approach: Six four alpha could you do at least uh hundred and fifty till Laker?
- (183) Bonanza 64A: Wilco, six four alpha.
- (184) Approach: Six four alpha, (thank you).
- (187) Approach: Bonanza six four alpha fly heading zero two zero maintain at least one five zero knots separator.
- (188) Bonanza 64A: Zero two zero, six four alpha.
- (189) Approach: Six four alpha caution wake turbulence you'll be following a Boeing seven fifty seven he's at twelve (over) your eleven-o'clock five miles descending out of three thousand eight hundred on the ILS.
- (190) Bonanza 64A: Roger six four alpha.
- (193) Approach: Bonanza six four alpha turn left heading zero one zero.

- (194) Bonanza 64A: Left (garbled) zero one zero six four alpha.
- (197) Approach: Bonanza six four alpha the: seven fifty seven's at twelve-o'clock at three miles.
- (198) Bonanza 64A: Six four alpha looking.
- (203) Bonanza 64A: Six four alpha has traffic in sight.
- (204) Approach: Bonanza six four alpha roger.
- (207) Approach: Bonanza six four alpha's five miles from Laker turn left three one zero maintain VFR cleared ILS runway two eight right approach.
- (208) Bonanza 64A: Left three one zero six four alpha.
- (209) Approach: Bonanza six four alpha maintain at least one five zero knots or greater until Laker.
- (210) Bonanza 64A: (Wilco), six four alpha.
- (218) Approach: Bonanza six four alpha contact tower one one eight point seven.
- (219) Bonanza 64A: Six four alpha.

Delta 1443

- (76) Delta 1443: Portland Approach, Delta fourteen forty three, six thousand seven hundred, descending to five, foxtrot.
- (77) Approach: Fourteen forty three Portland Approach reduce speed to one seven zero.
- (78) Delta 1443: Go to one seven zero, Delta fourteen forty three.
- (102) Approach: Delta fourteen forty three descend and maintain four thousand five hundred.
- (103) Delta 1443: Delta fourteen forty three clear to four thousand five hundred.
- (104) Approach: Delta fourteen forty three turn left heading zero two zero.
- (105) Delta 1443: Delta fourteen forty three heading, zero two zero.
- (106) Approach: Delta fourteen forty three turn left heading three five zero.
- (107) Delta 1443: Heading three five zero, Delta fourteen forty three.
- (112) Approach: Delta fourteen forty three turn left heading three one zero join the localizer.
- (113) Delta 1443: Delta fourteen forty three, three one zero join the local-.
- (121) Approach: Delta fourteen forty three you've got niner miles to Laker maintain three thousand till established on the localizer cleared ILS two eight right approach maintain one seven zero knots until Laker.
- (122) Delta 1443: Delta fourteen forty three, cleared for the ILS to two eight right and uh, maintain three thousand, till on the localizer.
- (123) Approach: Delta fourteen forty three that's correct and maintain one seven zero knots until Laker.

- (124) Delta 1443: Copy one seven zero knots till Laker
Delta fourteen forty three, thank you.
- (135) Approach: Delta fourteen forty three traffic one-
o'clock two miles maneuvering vicinity
Troutdale altitude unknown.
- (136) Delta 1443: Fourteen forty three: looking.
- (143) Approach: Delta fourteen forty three traffic no
longer a factor contact tower one one
eight point seven.
- (144) Delta 1443: Delta fourteen forty three.

Delta 745

- (23) Approach: Delta seven forty five turn right heading two eight zero, join the localizer.
- (24) Delta 745: Right two eighty, join the localizer, Delta seven forty five.
- (41) Approach: Delta seven forty five descend and maintain four thousand five hundred.
- (42) Delta 745: Down to four thousand five hundred Delta seven forty five.
- (44) Approach: Delta seven forty five is one zero miles from Laker, maintain four thousand five hundred till established on the localizer, cleared ILS two eight right approach, maintain speed one, seven zero until Laker.
- (45) Delta 745: One seventy till Laker forty five hundred (descending fifty seven) uh, ILS twenty eight right Delta seven forty five.
- (63) Approach: Delta seven forty five contact tower one one eight point seven over (the) Laker.
- (64) Delta 745: Tower at Laker, Delta seven forty five.

Expo 92

- (129) Expo 92: Portland Approach Expo nine two out of sixty five.
- (130) Approach: Expo nine two Portland Approach roger.
- (133) Approach: Expo nine two reduce speed to one seven zero descend and maintain four thousand five hundred.
- (134) Expo 92: One seven zero on the speed, and down to forty five.
- (138) Approach: Expo nine two turn left heading zero two zero.
- (139) Expo 92: Zero two zero, Expo nine two.
- (141) Approach: Expo nine two turn left heading three six zero.
- (142) Expo 92: Three six zero Expo ninety two.
- (148) Approach: Expo nine two you're niner miles from Laker turn left heading three one zero, maintain three thousand till established on the localizer, cleared ILS runway two eight right approach, maintain one seven zero knots until Laker.
- (149) Expo 92: That's two one, uh zero on the heading and, uh- one seven till Laker.
- (162) Expo 92: Portland uh expo nine two.
- (163) Approach: Expo nine two Portland.
- (164) Expo 92: ((Garbled))
- (165) Approach: Expo nine two contact tower one one eight point seven (and) request that (from them).
- (166) Expo 92: One one eight-.
- (167) Approach: On one one eight point seven affirmative, or uniform's two five seven point eight.

Ford 645

- (82) Ford 645: Portland Approach, Ford Trimotor niner six four five.
- (83) Approach: ((Garbled)) Portland Approach say again?
- (84) Ford 645: Ford Trimotor niner six four five we're squawking twelve hundred. We're uh just off Troutdale southbound we'd like to: make one circuit over the city, we're uh one thousand three hundred, then we'll be southbound to McMinnville.
- (85) Approach: Roger and uh say again the full call sign? I got the niner six and what was the last of it?
- (86) Ford 645: Niner six, four five.
- (87) Approach: Niner six four five is that it?
- (88) Ford 645: That is correct.
- (89) Approach: And what's your type aircraft niner six four five?
- (90) Ford 645: Uh we're a Ford Trimotor.
- (91) Approach: Ford uh, six four five squawk zero one zero five and ident remain outside the ARSA till radar identified.
- (92) Ford 645: OK.
- (98) Approach: Ford uh, Trimotor six four five radar contact (four) southwest of Troutdale traffic at ten-o'clock, three miles northbound altitude indicates two thousand four hundred.
- (99) Ford 645: R:oger we're one thousand five and we're OK for over the city?
- (100) Approach: Trimotor uh six four five continue southbound for at least two more miles before proceeding over downtown.
- (101) Ford 645: OK, will do thank you niner six four five.
- (116) Approach: Ford Trimotor six four five contact approach one one eight point one.
- (117) Ford 645: Eighteen one, roger.

Horizon 182

- (54) Horizon 182: Portland Approach Horizon one eighty two seven thousand descending six thousand heading one zero zero speed (sixty) uh hundred and seventy knots.
- (55) Approach: Horizon one eighty two Portland Approach roger.
- (72) Approach: Horizon one eighty two turn left heading zero one zero, descend and maintain four thousand five hundred.
- (73) Horizon 182: Four thousand five hundred left heading zero one zero, Horizon one eighty two.
- (74) Approach: Horizon one eighty two continue left turn heading of uh three four zero.
- (75) Horizon 182: Three four zero Horizon one eighty two.
- (80) Approach: Horizon one eighty two turn left heading three two zero join the localizer.
- (81) Horizon 182: Three two zero join (the) localizer Horizon one eighty two.
- (96) Approach: Horizon one eighty two one one miles from Laker maintain four thousand five hundred till established the localizer cleared ILS two eight right approach and if you'd like can increase to uh one niner zero until Laker.
- (97) Horizon 182: Horizon one eighty two (cleared to the approach) (garbled).
- (118) Horizon 182: Portland Approach Horizon, uh one eighty two visual (two eight left).
- (119) Approach: Horizon one eighty two roger contact tower one one eight point seven.
- (120) Horizon 182: ((Garbled)) (one eighty two).

Horizon 391

- (4) Horizon 391: Horizon uh, three ninety one (uh we'd like to) uh join the localizer.
- (5) Approach: Horizon three ninety one turn right heading three one zero join the localizer.
- (6) Horizon 391: Three one zero. (Three) ninety one.
- (7) Approach: Horizon three ninety one you're eight miles from uh, Laker maintain three thousand till established localizer cleared ILS two eight right approach.
- (8) Horizon 391: Cleared the ILS, two eight right approach three thousand till establish. Horizon Air three ninety one.
- (13) Approach: Horizon three ninety one maintain one seven zero knots until Laker.
- (14) Horizon 391: One seventy till Laker, Horizon three ninety one.
- (18) Horizon 391: Horizon three ninety one has the field in sight.
- (19) Approach: Horizon three ninety one roger cross abeam of Laker at or above, two thousand, you're cleared for the visual approach runway two eight left.
- (20) Horizon 391: Laker at or above two thousand, cleared the visual to the left, roger three ninety one.
- (25) Horizon 391: Three ninety one, can we pick it up, (just a) little bit.
- (26) Approach: Horizon three ninety one, uh that's approved.
- (27) Horizon 391: Horizon three ninety one, (roger).

Horizon 64

- (2) Approach: Horizon sixty four turn right heading one two zero.
- (3) Horizon 64: Turn right one two zero Horizon sixty four.
- (15) Approach: Horizon sixty four turn: correction uh, continue on your present heading.
- (16) Horizon 64: ((garbled))
- (31) Approach: Horizon sixty four turn left heading zero, six zero.
- (32) Horizon 64: Zero six zero, Horizon, uh, sixty four.
- (37) Approach: Horizon sixty four turn left heading three one zero join the localizer.
- (38) Horizon 64: Three ten and join Horizon sixty four.
- (43) Approach: Horizon, uh disregard.
- (49) Approach: Horizon sixty four do you still have the airport?
- (50) Horizon 64: Uh, not now, Horizon sixty four.
- (51) Approach: Horizon sixty four roger. Present heading join the localizer, descend and maintain four thousand five hundred.
- (52) Horizon 64: Present heading, join, forty five hundred, Horizon sixty four.
- (57) Horizon 64: Horizon sixty four cleared for the approach?
- (58) Approach: Horizon sixty four you're: one zero miles from Laker, maintain four thousand five hundred till established on the localizer cleared ILS two eight right approach, maintain one seven zero knots until Laker.
- (59) Horizon 64: ((Garbled)) Laker forty five hundred (feet) cleared for the approach, Horizon sixty four.
- (60) Approach: Six four caution wind turbulence you're five miles (in) trail of a seven twenty seven.
- (61) Unknown: ((Mike depressed))

(67) Horizon 64: A: approach Horizon sixty four has uh, airport in sight, looking for a visual to the left.

(68) Approach: Horizon sixty four roger, cross abeam of Laker at or above two thousand, cleared visual approach runway two eight left.

(69) Horizon 64: At abeam of Laker two thousand, visual to the left Horizon sixty four.

Horizon 9

- (252) Horizon 9: Portland Approach Horizon niner, at niner thousand for six thousand heading one four five.
- (253) Approach: Horizon niner Portland Approach roger.
- (258) Approach: Horizon niner turn right heading one seven zero.
- (259) Horizon 9: Horizon niner one seven zero.
- (260) Approach: Horizon niner descend and maintain four thousand five hundred.
- (261) Horizon 9: Horizon niner four thousand five hundred.
- (262) Approach: Horizon niner turn right heading two one zero descend and maintain three thousand.
- (263) Horizon 9: Horizon niner two one zero at three thousand (garbled).
- (264) Approach: Horizon niner turn final east of Laker at or above two thousand five hundred, (cross) abeam of Laker at or above two thousand, cleared visual approach runway two eight left.
- (265) Horizon 9: Horizon niner final at or above two thousand five hundred abeam of Laker two thousand cleared for visual two eight left.
- (268) Approach: Horizon niner uh is there still scattered layers below you?
- (269) Horizon 9: Uh, scattered layers right about five thousand feet here, but its wide open over the river.
- (270) Approach: Horizon niner, thank you.
- (271) Horizon 9: Uh, Portland this is Horizon niner, basically it's uh clear west of Troutdale.
- (272) Approach: Horizon niner, thank you.
- (273) Approach: Uh, niner contact the tower one one eight point seven good morning.
- (274) Horizon 9: Horizon ni-niner to the tower, good morning.

November 769

- (238) N769: ((Garbled)) seven six niner Portland.
- (245) Approach: November eight zero seven six niner Portland Approach.
- (246) N769: Roger we're r:with you.
- (247) Approach: November seven six niner roger say your uh altitude reading and your requested altitude.
- (248) N769: Right now at uh one thousand four hundred, with uh request to climb to four thousand.
- (249) Approach: ((Beep)) seven six niner roger maintain VFR, climb to your requested altitude.
- (250) N769: ((Garbled)) (Archer) seven six niner we'll be uh flying four thousand five hundred.
- (251) Approach: (November) seven six niner, thank you.
- (256) Approach: (November) seven six niner contact Portland Approach on one two seven point eight five.
- (257) N769: Twenty seven eighty five, seven six niner.

Sundance 512

- (108) Sun 512: Approach Sundance five twelve's with you at five thousand, one hundred on the heading one ninety on the speed.
- (109) Approach: Sundance five twelve Portland Approach roger.
- (110) Approach: Sundance five twelve maintain speed one seven zero.
- (111) Sun 512: One seven zero, Sundance five twelve.
- (114) Approach: Sundance five twelve turn left heading zero five zero.
- (115) Sun 512: Left zero five zero Sundance five twelve.
- (125) Approach: Sundance five twelve turn left heading zero one zero.
- (126) Sun 512: Left zero one zero Sundance five twelve.
- (127) Approach: Sundance five twelve descend and maintain four thousand five hundred.
- (128) Sun 512: Four thousand five hundred, Sundance five twelve.
- (131) Approach: Sundance five twelve eight miles from Laker turn left heading three one zero. Maintain four thousand five hundred till established localizer cleared ILS two eight right approach, maintain one seven zero knots until Laker.
- (132) Sun 512: Three one zero uh four thousand five hundred we'll maintain uh, speed, (and cleared for the) ILS two eight right Sundance five twelve.
- (157) Approach: Sundance five twelve contact tower one one eight point seven.
- (158) Sun 512: Five twelve good-bye.

Sundance 608

(191) Sun 608: (Approach), Sundance six zero eight with you out of six thousand two hundred for five thousand.

(192) Approach: Sundance six zero eight Portland Approach r:oger.

(199) Approach: Sundance six zero eight reduce speed to two one zero and maintain five thousand.

(200) Sun 608: Two one zero five thousand six oh eight.

(216) Approach: Sundance six zero eight descend and maintain four thousand five hundred.

(217) Sun 608: Four thousand five hundred six oh eight.

(220) Approach: Sundance six zero eight turn right heading one six zero.

(221) Sun 608: One six zero Sundance six oh eight.

(222) Approach: Sundance six zero eight turn right heading one niner zero and descend and maintain three thousand.

(223) Sun 608: One nine zero three thousand Sundance six oh eight.

(227) Sun 608: (Six oh eight) has the field in sight.

(228) Approach: (Six zero eight) you're following an MD eighty at one-o-clock five miles at three thousand.

(229) Sun 608: In sight.

(230) Approach: (Sundance six zero eight) follow that traffic, caution wake turbulence, cross Laker at or above two thousand and cleared for visual approach runway two eight right.

(231) Sun 608: Cleared Laker two thousand behind the MD-80, (Sundance) six oh eight.

(241) Approach: Sundance six zero eight contact tower one one eight point seven.

(242) Sun 608: So long.

Tina 79

(266) (Tina) 79: Portland Approach (Tina) seven nine
(level five thousand).

(267) Approach: (Tina) seven nine Portland Approach
roger.

Tingle 148

Note: One controller may monitor more than one frequency, particularly a military frequency in addition to a civilian frequency. When this happens, the controller will transmit instructions on both frequencies. Thus, listeners on one frequency will hear only the controller's side of a conversation being held on another frequency.

- (39) Approach: Tingle one (four eight) Portland Approach, r:oger, fly your present heading and reduce speed to two one zero.
- (40) Approach: Tingle one (four eight) thank you.
- (46) Approach: Tingle one (four eight) roger there's three of them out there from your uh, ten-o'clock all the way to your eleven thirty on the ILS approach uh, you can expect vectors behind them.
- (56) Approach: Tingle one (four eight) turn left heading zero six zero.
- (65) Approach: Tingle one (four eight) you'll be following traffic eleven-o'clock at five miles a metroliner at four thousand five hundred on the localizer.
- (66) Approach: Tingle one (four eight) turn left heading zero three zero.
- (70) Approach: Tingle one (four eight) turn left heading three two zero join the localizer.
- (71) Approach: Tingle one (four eight) descend and maintain four thousand five hundred.
- (79) Approach: Tingle one (four eight) is niner miles from Laker, maintain four thousand five hundred till established on the localizer cleared for ILS runway two eight right approach do not exceed two one zero knots.
- (93) Approach: (Tingle) one (four eight) say again?
- (94) Approach: Tingle one (four eight) that is approved once you're inside the Laker, circle the runway two eight l:eft and contact the tower on one one eight point or correction tower's on two five seven point eight.
- (95) Approach: Tingle one (four eight) contact tower now at two five seven point eight.

United 169

- (150) United 169: (United) one sixty nine Portland.
- (151) United 169: Portland Approach United one uh sixty nine with you out of nine seven with foxtrot.
- (152) Approach: United one sixty nine Portland Approach descend and maintain five thousand five hundred.
- (153) United 169: OK down to five thousand five hundred and uh what was (about the) speed?
- (154) Approach: Bonanza or correction United one sixty nine normal speed.
- (155) United 169: Normal speed down fifty five hundred, is that affirmed?
- (156) Approach: That's affirmative United one sixty nine.
- (170) Approach: United one sixty nine fly heading two five zero join the localizer.
- (171) United 169: Two five zero and join the localizer, United one sixty nine.
- (175) Approach: United one sixty nine descend and maintain four thousand five hundred.
- (176) United 169: Four thousand five hundred United one sixty nine.
- (177) Approach: United one sixty nine is one, one miles from Laker maintain four thousand five hundred till established on the localizer, cleared for ILS runway two eight right approach.
- (178) United 169: Forty five hundred till established for ILS two eight right for one uh, United one sixty nine, is that affirmed?
- (179) Approach: United one sixty nine, affirmative.
- (195) Approach: United one sixty nine contact the tower one one eight point seven over Laker, there's traffic off to your left a Bonanza will be following you. He's uh nine o'clock three miles.
- (196) United 169: United one sixty nine roger.

Unknown

Note: These utterance could not be clearly associated with any dialogue. Utterance 1 is truncated by the beginning of the tape. Utterances 30 and 53 appear to be the final controller transmissions of dialogues taking place on another frequency. The others are microphone clicks and squawks.

- (1) Unknown: (-forty) five.
- (17) Unknown: ((Mike depressed))
- (28) Unknown: ((Mike depressed))
- (29) Unknown: ((squawk))
- (30) Approach: ((garbled)) zero papa service terminated
squawk twelve hundred, frequency change
approved.
- (53) Approach: (November) four three juliet radar
services terminated and squawk one two
zero zero frequency change approved.
- (168) Unknown: ((Mike depressed))
- (224) Unknown: ((Mike depressed))
- (275) Unknown: ((Mike depressed))

References

Federal Aviation Administration (1989). *Air traffic control*. Pub. No. 7110.65F.

Federal Aviation Administration (1990). *Airman's information manual*.

Rosenbaum, S. L. (1988). *A user's view of the air traffic control (ATC) system*, Internal Memorandum 46321-881130-01.IM, AT&T Bell Laboratories, Nov. 1988.

Appendix A

Transcription Conventions

For the purposes of this transcript, an utterance is defined to be a single transmission directed toward a single recipient. That is, an utterance is ended when either

- the speaker begins addressing a different recipient, or
- the speaker ends the transmission (by closing the microphone).

Each utterance is numbered and labeled with the speaker, if known, or with “Unknown” if the speaker’s identity could not be determined.

The end of a transmission is typically accompanied by a pause of a second or so while other potential speakers realize that the channel is available. These brief pauses are not noted in the transcript. Pauses longer than two or three seconds are marked as untimed pauses (see below), and indicate that no conversant who could transmit wished to do so. The determination of whether a pause had occurred was made subjectively by the transcriber.

Except for the notation indicated below, words are spelled using standard spellings. No attempt was made to depict alternate pronunciations that may have been used (e.g., “goin” for “going”).

TABLE 1. Notation

: (colon)	Denotes a lengthened sound within a word.
- (dash)	Indicates a stop, a cutting off of sound. In mid-utterance, it denotes a verbal hesitation. It also occurs at the end of an utterance when the microphone is closed before the speaker finishes speaking.
(words in parenthesis)	Transcriber was uncertain of the words.
((words in double parenthesis))	Transcriber notes.
. (period)	A full stop, with falling intonation.
? (question mark)	A rising intonation.
, (comma)	A short pause with slight falling intonation, less than that indicated by a period.
(.)	Untimed pause between utterances.

Appendix B

Glossary

The utterances in this transcript contain specialized terms and usages specific to the Air Traffic Control (ATC) domain. Because this transcript is assumed to be of interest primarily to researchers already working in this area, general ATC terminology and procedures are not defined here. For a good introduction to ATC, see (Rosenbaum, 1988). More detailed information may be found in (FAA, 1989; FAA, 1990).

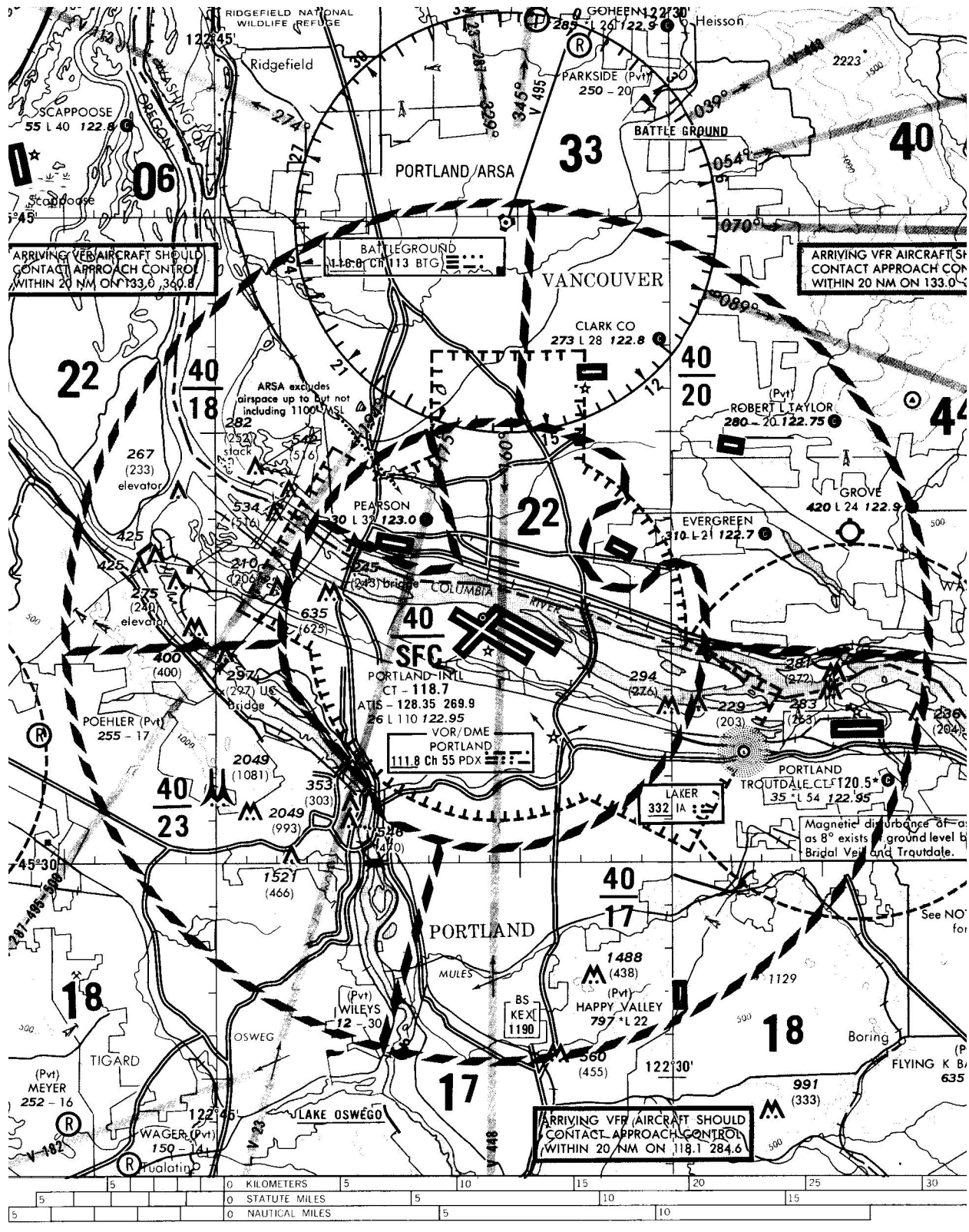
The glossary below includes local terms, such as place names, and the abbreviations used in this document.

TABLE 2. Glossary

Approach	The controller working the Portland Approach position in the TRACON.
28 Right Approach	ILS RWY 28R Approach, an instrument approach to PDX. See Appendix C.
ARSA	Approach Radar Service Area.
city, the	The downtown area of Portland, Oregon; about 5 NM from PDX.
Laker	A Non-Directional Radiobeacon southeast of PDX.
McMinnville	A smaller, uncontrolled airport about 30 NM southwest of PDX.
NM	Nautical mile(s).
Troutdale	A smaller, controlled airport about 8 NM east of PDX. See Appendix C.
PDX	Portland International Airport, located in Portland, Oregon. This is a moderately-busy airport with an ARSA. See Appendix C.
river, the	The Columbia River. PDX is located on the south bank of the Columbia. See Appendix C.
TRACON	Terminal Radar Approach Control.

Appendix C Charts

1. Portland inset of Seattle Sectional aeronautical chart, 37th edition, June 29, 1989, U.S. Department of Commerce.
2. Exerpts of entry for Portland, OR, Airport/Facility Directory, Northwest U.S., November 16, 1989, U.S. Department of Commerce, 82-83.
3. ILS RWY 28R, Portland Intl (PDX), Instrument approach procedures, U.S. Northwest, October 19, 1989, U.S. Department of Commerce, 213.
4. River visual RWY 28R, Portland Intl (PDX), Instrument approach procedures, U.S. Northwest, October 19, 1989, U.S. Department of Commerce, 221.
5. Airport diagram, Portland Intl (PDX), Instrument approach procedures, U.S. Northwest, October 19, 1989, U.S. Department of Commerce, 222.



PORTLAND INSET

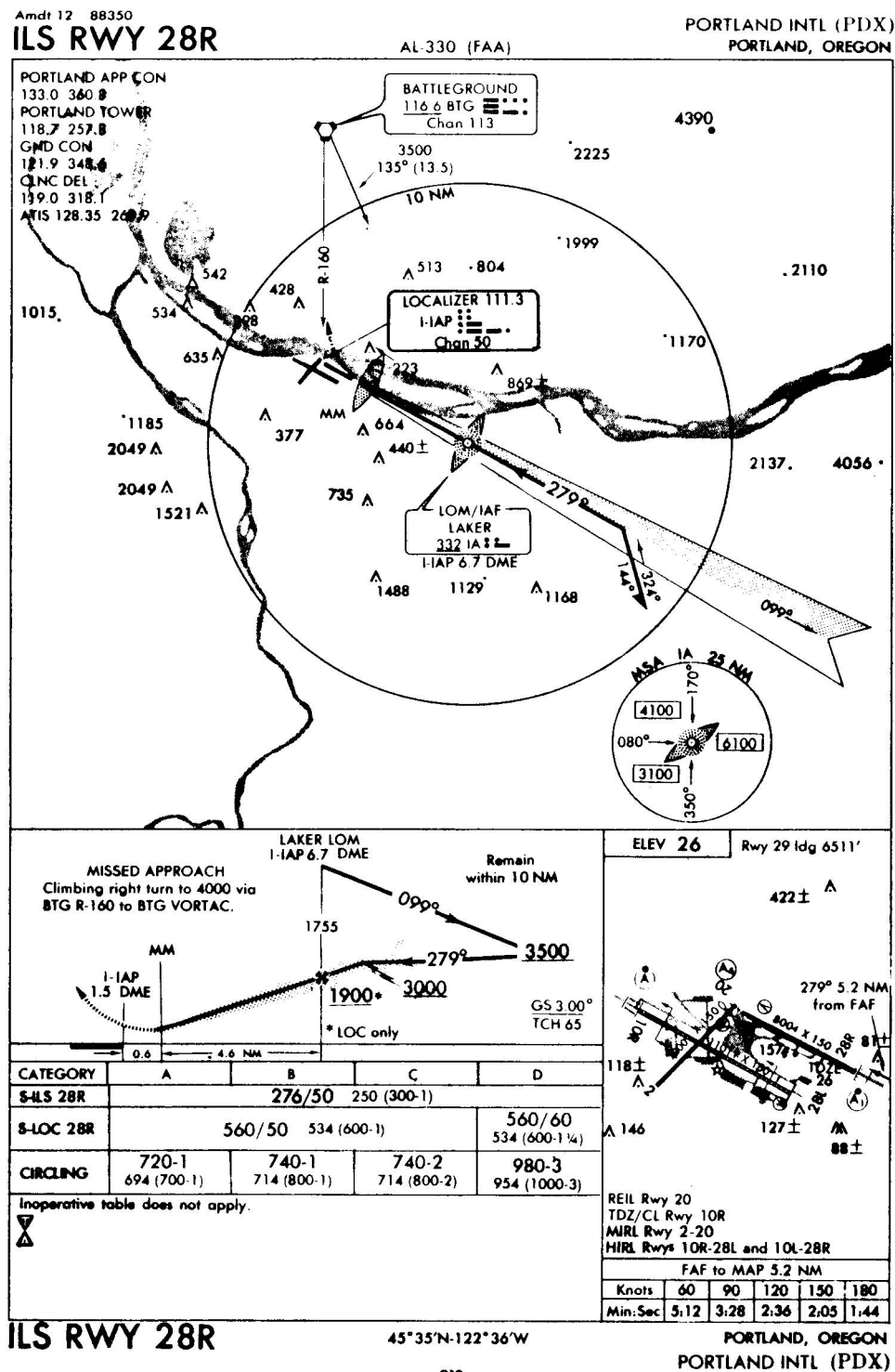
SCALE 1:250,000

1. Portland inset of Seattle Sectional aeronautical chart, 37th edition, June 29, 1989, U.S. Department of Commerce.

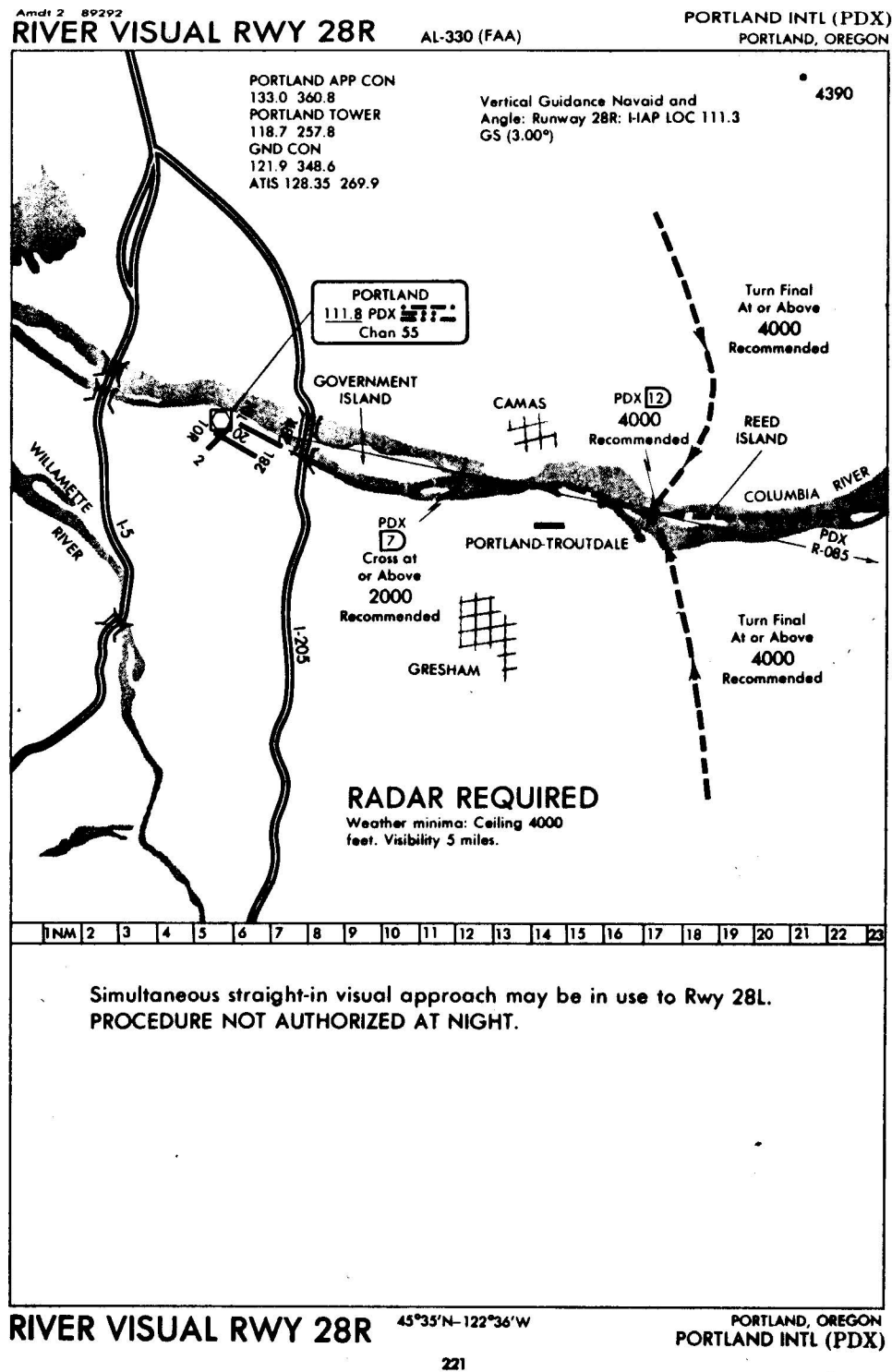
§ **PORTLAND INTL (PDX)** 4 NE UTC-8(-7DT) 45°35'20"N 122°35'47"W SEATTLE
 27 B S4 FUEL 100, JET A OX 1, 2, 3, 4 LRA ARFF Index D H-1A, L-1C
 RWY 10R-28L: H11011X150 (ASPH-GRVD) S-200, D-200, DT-360 HIRL CL IAP
 RWY 10R: ALSF2, TDZ, Rgt tlc. Arresting device. RWY 28L: VASI(V4L)—GA 3.0°TCH 60'. Arresting device.
 RWY 10L-28R: H8004X150 (ASPH-GRVD) S-200, D-200, DT-400 HIRL
 RWY 10L: MALS, VASI(V4L)—GA 3.0°TCH 60'. RWY 28R: ALSF1, Levee, Rgt tlc.
 RWY 02-20: H7000X150 (ASPH) S-124, D-170, DT-310 MIRL
 RWY 20: REIL, VASI(V4L)—GA 4.0°TCH 33'. Thld dspcd 489'. Road.
AIRPORT REMARKS: Attended continuously. CLOSED to non-powered acft except in Emerg. Twy inner Bravo
 CLOSED to acft with wing span greater than 108'. Taxiway S3B CLOSED to acft over 12,500 lbs gross
 weight; Exit S5 south of Rwy 10R-28L CLOSED to acft over 65,000 lbs gross weight. Exit S4 south of Rwy
 10R-28L CLOSED to acft over 20,000 lbs gross weight. 180° turns by acft heavier than 12,500 lbs
 prohibited on all rwys and taxiways. Acft weighing more than 65,000 lbs are restricted from using taxiway G.
 Migratory and wintering flocks of large waterfowl on and in vicinity of arpt. Heavy seagull activity Sep.-Apr.,
 except high number of birds year around. Rwy 28L arrivals are noise sensitive, expect apch to 28R with
 transition to 28L. Noise abatement procedures in effect call arpt manager, 503-231-5000, ext 407. Flight
 Notification Service (ADCUS) available.
COMMUNICATIONS: ATIS 128.35 (503)284-1711 UNICOM 122.95
 MC MINNVILLE FSS (MMV) TF 1-800-WX-BRIEF, NOTAM FILE PDX.
 (1) APP COM 133.0 (280°-099°) 118.1 (100°-279°)
 TOWER 118.7 GND COM 121.9 CLNC DEL 119.0
 (2) DEP COM 133.0 (280°-099°) 118.1 (100°-279°) 124.35
 AISA ctc APP COM
RADIO AIDS TO NAVIGATION: NOTAM FILE PDX.
 BATTLE GROUND (H) ADVORTACH 116.6 MBTG Chan 113 45°44'53"N 122°35'25"W 161° 9.6 NM to fld.
 250/21E. General outlook on TWEB 0600-1300Z; TWEB out of svc indefinitely.
 (A) VOR/DME 111.8 PDX Chan 55 45°35'38"N 122°36'18"W at fld. 19/20E.
 VOR/DME unusable 131°-230°, 322°-039°.
 LAKER NDB (MMW/LOM) 332 IA 45°32'29"N 122°27'40"W 277° 6.4 NM to fld.
 ILS/DME 109.9 I-PDX Chan 36 Rwy 10R Category II available.
 ILS 111.3 I-IAP Rwy 28R LOM LAKER NDB.
 ILS/DME 108.9 I-GPO Chan 26 Rwy 20 Localizer only.

§ **PORTLAND-TROUTDALE (TTD)** 10 E UTC-8(-7DT) 45°32'58"N 122°24'00"W SEATTLE
 35 B S4 FUEL 100LL, JET A H-1A, L-1C
 RWY 07-25: H5400X150 (ASPH) S-19 MIRL IAP
 RWY 07: REIL, VASI(V4L)—GA 3.0°TCH 50'. Tree. RWY 25: REIL, VASI(V4L)—GA 3.0°TCH 42'. Tree.
AIRPORT REMARKS: Attended Apr-Oct 1500-0430Z; Nov-Mar 1500-0300Z; CAUTION: Migratory flocks of
 waterfowl on and in vicinity of arpt. ACTIVATE MIRL Rwy 07-25-CTAF. Control Zone effective
 1500-0600Z;
WEATHER DATA SOURCES: LAWRS
COMMUNICATIONS: CTAF 120.5 UNICOM 122.95
 MC MINNVILLE FSS (MMV) TF 1-800-WX-BRIEF, NOTAM FILE TTD.
 (1) PORTLAND APP COM 133.0 (280°-099°) 118.1 (100°-279°) (2) PORTLAND DEP COM 133.0
 TROUTDALE TOWER 120.5 (1500-0600Z); GND COM 121.8
RADIO AIDS TO NAVIGATION: NOTAM FILE PDX.
 BATTLE GROUND (H) ADVORTACH 116.6 MBTG Chan 113 45°44'53"N 122°35'25"W 125° 14.4 NM to fld.
 250/21E. General outlook only 0600-1300Z; TWEB out of svc indefinitely.
 LAKER NDB (MMW/LOM) 332 IA 45°32'29"N 122°27'40"W 059° 2.6 NM to fld.
COMM/NAVIO REMARKS: Freq 121.5 not avbl at tower.

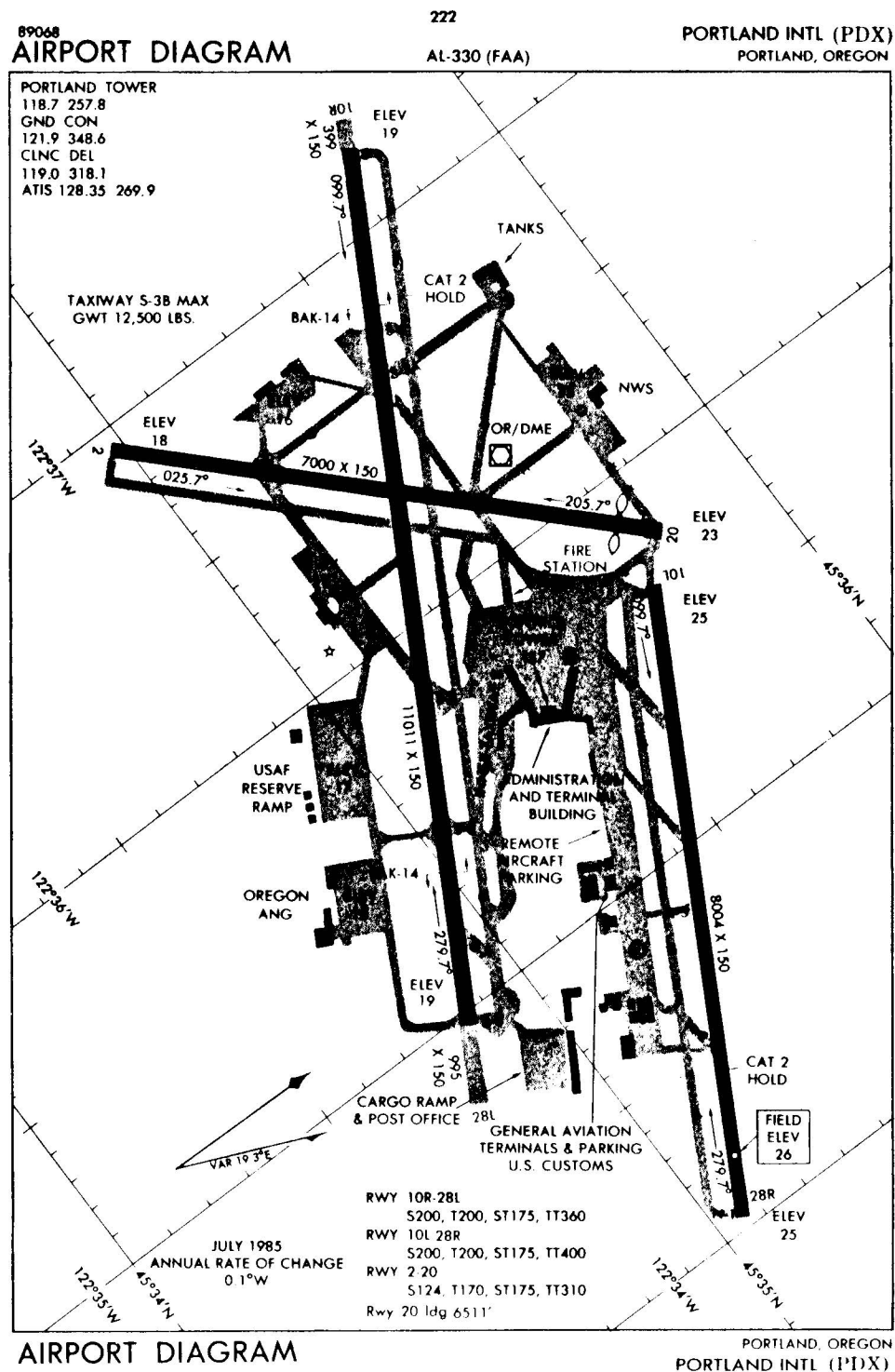
2. Exerpts of entry for Portland, OR, Airport/Facility Directory, Northwest U.S., November 16, 1989, U.S. Department of Commerce, 82-83.



3. ILS RWY 28R, Portland Intl (PDX), Instrument approach procedures, U.S. Northwest, October 19, 1989, U.S. Department of Commerce, 213.



4. River visual RWY 28R, Portland Intl (PDX), Instrument approach procedures, U.S. Northwest, October 19, 1989, U.S. Department of Commerce, 221.



5. Airport diagram, Portland Intl (PDX), Instrument approach procedures, U.S. Northwest, October 19, 1989, U.S. Department of Commerce, 222.