Log Messages diagnosed

MSG, 1392481, Ground start
MSG, 1392511, Beginning INS calibration. Do not move plane
MSG, 3005218, Calibrating barometer
MSG, 4617551, Barometer calibration complete
MSG, 4617578, Airspeed calibration started
MSG, 4617609, Ground start complete
MSG, 4617699, ESC: BLHeli installed on port 0
MSG, 4617752, ESC: ESC: 1 motors mask=0x0001
MSG, 4638676, GPS 1: detected as u-blox at 115200 baud
MSG, 5621809, ArduPlane V3.10.0-dev (1e0ca409)
MSG, 5621923, ChibiOS: b8698efe
MSG, 5622021, MatekF405-Win 003E0024 30374713 3836383
MSG, 5622038, New mission
MSG, 5622385, GPS 1: detected as u-blox at 115200 baud
MSG, 6984568, Airspeed[0] sensor calibrated
MSG, 19744110, u-blox 1 HW: 00080000 SW: ROM CORE 3.01 (107888)
MSG, 30662503, EKF2 IMU0 tilt alignment complete
MSG, 42622671, EKF2 IMU0 Origin set to GPS
MSG, 114764931, Executing nav command ID #16
MSG, 392722852, Throttle armed
MSG, 416402728, EKF2 IMU0 yaw aligned to GPS velocity
MSG, 416422554, EKF2 IMU0 is using GPS

MSG, 760863341, Executing nav command ID #16
MSG, 768883587, Reached waypoint #1 dist 11m

This starts at about 16:50 timestamp on first hatcam video
are these distances horizontal point of closest approach to WP?
(FWIW, WP_RADIUS is set to 50 meters)

MSG, 768883679, Executing nav command ID #16
MSG, 779583281, Reached waypoint #2 dist 8m

MSG, 779583378, Executing nav command ID #16
MSG, 784185124, Reached waypoint #3 dist 19m

MSG, 784185223, Executing nav command ID #16
MSG, 788185180, Reached waypoint #4 dist 30m

MSG, 788185279, Executing nav command ID #16
MSG, 795583327, Reached waypoint #5 dist 11m

MSG, 795583424, Executing nav command ID #16
MSG, 802484721, Reached waypoint #6 dist 13m

MSG, 802484854, Executing nav command ID #16
MSG, 809684171, Reached waypoint #7 dist 30m — *downwind turning base, 43* turn, actual altitude 73m, target alt was 60m; 13m too high*

MSG, 809684271, Executing command ID #189 — *DO_LAND_START command is waypoint #8, right after #7 (where is ID #189 defined?)*

MSG, 809684351, Executing nav command ID #16
MSG, 825284305, Reached waypoint #9 dist 20m — *base turning final, 85* turn (too sharp a turn after DO_START_LAND?)*
Actual altitude 47m, target alt was 40m, 7m too high

MSG, 825284405, Executing nav command ID #16
MSG, 843085073, Reached waypoint #10 dist 1m — *waypoint at edge of parking lot (#11 is landing point)*
Actual altitude was 27m, target altitude was 20m, 7m too high

MSG, 843085157, Executing nav command ID #21 — *log shows this at same time as reaching WP#10*

MSG, 843085404, Landing approach start at 26.2m — *same time as WP#10; 26.2 is actual alt(m); log shows actual sink rate of ~1m/sec*

MSG, 844485391, Landing glide slope 14.6 degrees — *is this calculated from this point to landing point?*
This msg appears just after WP#11, at altitude of ~23m, 64.7m from LP. I don't understand how 14.6 is calculated, but obviously we overshoot the LP.*

MSG, 850784803, Flare 12.6m sink=2.59 speed=9.4 dist=0.9 *Is this flare or pre-flare? Note high sink rate 2.59 vs ~1m/sec. What is dist? Is it distance to Landing Point? <u>This message appears when plane is at LP.</u> So it should be flare, not pre-flare. Perhaps sink rate 2.59 is a TARGET sink rate because controller*

now realizes we are going to overshoot the LZ. In hatcam video, plane passes overhead at about timestamp 18:20 in first hatcam video. Seem visually consistent with 12-13 meters altitude then.

Key landing parameters

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LAND_FLARE_ALT,2        flare at 2 meters altitude
LAND_FLARE_SEC,2        flare at 2 seconds before landing
LAND_PF_ALT,10          pre-flare at 10 meters altitude
LAND_PF_ARSPD,7         in this case, same value as TECS_LAND_ARSPD
LAND_PF_SEC,6           pre-flare at 6 seconds before landing

TECS_LAND_ARSPD,7       note this is same value as LAND_PF_ARSPD
TECS_LAND_DAMP,0.5
TECS_LAND_IGAIN,0
TECS_LAND_PDAMP,0
TECS_LAND_PMAX,10
TECS_LAND_SINK,0.25     target sink rate during the flare stage
TECS_LAND_SPDWGT,1.5    0 = altitude priority
                        2 = airspeed priority,
                        -1 = auto-adjust throughout landing
                        (Note my TECS_SPDWEIGHT = 1 in this param set)
TECS_LAND_SRC,0.2
TECS_LAND_TCONST,2
TECS_LAND_TDAMP,0
TECS_LAND_THR,-1        < 0 is disabled

TECS_PITCH_MAX,0        0 = disabled, relies instead on LIM_PITCH_MAX
TECS_PITCH_MIN,0        0 = disabled, relies instead on LIM_PITCH_MIN

LIM_PITCH_MAX,4500      45* up
LIM_PITCH_MIN,-4500     45* down
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MSG, 860985303, Landing aborted via throttle
MSG, 860985392, Landing aborted, climbing to 30m

MSG, 868664532, Restarted landing via DO_LAND_START: 8
MSG, 887844123, Executing command ID #189

MSG, 887844216, Executing nav command ID #16
MSG, 900585066, Reached waypoint #9 dist 51m *not very close, esp with WP radius 50m*

MSG, 900585160, Executing nav command ID #16
MSG, 924683243, Passed waypoint #10 dist 13m

MSG, 924683350, Executing nav command ID #21
MSG, 924683496, Landing approach start at 19.0m
MSG, 928283508, Landing glide slope 15.7 degrees
MSG, 937783661, Flare 4.9m sink=1.51 speed=7.0 dist=0.8

MSG, 947884328, Landing aborted via throttle *this happens at time mark ~20:00 on hatcam video. Very close to landing.*
MSG, 947884410, Landing aborted, climbing to 30m
MSG, 957584692, Restarted landing via DO_LAND_START: 8
MSG, 957585028, Executing command ID #189
MSG, 957585170, Executing nav command ID #16