

Jun 26, 2019

Mr. Lovell,

Below are 12 key points I want to leave you with from today's interview (6/26/19). These points augment our discussion today and the information previously provided in the documents sent to you on my behalf by my attorneys. Thank you, Ed Pierson

#### Key Points

1. The 737 manufacturing facility (737 Plant) in Renton, Washington was in horrible shape when the Lion Air 737-8 MAX airplane was manufactured there last summer (2018).
2. In June and July 2018 (prior to the Lion Air accident), I expressed serious concerns about the quality and safety of the airplanes being built in the factory to the 737 General Manager and recommended the shutting down of the manufacturing line. He refused to do this.
3. I made additional recommendations including reducing the amount of overtime (OT) on IAM employees and analyzing engineering and quality data to determine if there were any potential quality risks that might require us to alert our customers. I don't know if the 737 GM carried out these recommendations.
4. The Ethiopian airplane was built just a few months after the Indonesian airplane at the same Renton, Washington factory. (Prior to the Ethiopian Accident I had written Boeing's CEO & Board of Directors).
5. There is plenty of evidence in the form of media reports, factory metrics, industrial engineering reports, supply chain reports, process monitoring reports, and manufacturing quality data that show just how chaotic the manufacturing environment was in 2018 (still is?). This information and data should be made immediately available to both the Indonesian and Ethiopian accident investigation teams.
  - a. Data sources include factory metrics like Jobs Behind Schedule, SATs, Tags, Squawks, Shift to Shift Turnover Notes, Daily Missing Parts Reports, Compliance Audits, OT, etc. Many factory processes were clearly unstable. A complete list of data sources can be provided upon request.
6. During this same period in 2018, 737 executives placed extreme and unreasonable schedule pressure on understaffed factory workers to expedite work in order to produce more airplanes (still going on?).
7. A tremendous amount of OT was performed by hundreds of employees over many months.
8. There was evidence of fatigue from the mechanics, electricians, technicians, QA inspectors, managers and other employees from all the OT and what had now become chronic schedule recovery operations.
9. There is ample data (SAT reports, Tags, shift turnover notes, etc.) confirming the large amount of "out of sequence" work and process breakdowns that resulted in rushed & sloppy workmanship. This quality management is inconsistent with Boeing's Production Certificate and FAA Order 8120.2G.
10. Manufacturing issues that were occurring while these 2 airplanes were being built could be contributing factors to the accidents. The past and current state of the factory needs to be thoroughly investigated by both investigation teams. These teams should be afforded the opportunity to talk with employees to get a well-rounded picture of the operating environment at the time these airplanes were built.
  - a. Examples: late work; electrical wiring EWIS issues; key electrical parts that regularly missed planned installation dates like engines, power panels & wire bundles; functional test issues with electrical, HIRF & CSMS testing; inadequate staffing; not enough qualified employees like electricians, technicians and engine mechanics, & test equipment availability problems.
  - b. IAM mechanics, electricians, quality inspectors and first line managers that built these airplanes who were placed under this misguided schedule pressure by executives should be interviewed.
11. Important flight control questions (that may be related to manufacturing issues) have yet to be answered, at least in public. For example, why did the AOA Sensors fail in the first place? Were the sensors improperly designed? Manufactured incorrectly? Installed incorrectly? Tested incorrectly? A potential bird strike on the Ethiopian airline does not explain the other flights. Since the AOA Sensors did fail as evidenced by the faulty data output, how come Boeing and the FAA have not directed airlines to inspect and if necessary, replace/fix the sensors on 737 airplanes currently in-service around the world?
12. Chronic manufacturing problems that occurred in 2018 at the 737 plant (ref: the documents you acknowledged receipt on 6/4/19) could potentially lead to future 737 MAX, NG or P-8 accidents. If any of these problems are still occurring within the factory, they must be fixed immediately.