Ed Pierson

From: Ed Pierson [redacted]
Sent: Friday, February 15, 2019 10:15 AM
To: 'Fennelly (US), Padraic B'
Subject: RE: 737 Program Safety Concerns

Padraic,

Thank you for responding. Unfortunately I don't think this is a sufficient response. Sincerely, Ed

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From: Fennelly (US), Padraic B <Padraic.B.Fennelly@boeing.com>
Sent: Thursday, February 14, 2019 11:26 AM
To: Ed Pierson [redacted]; Luttig (US), Michael <[redacted]@boeing.com>
Subject: RE: 737 Program Safety Concerns

Ed --

I wanted to thank you again for reaching out to us and for raising your concerns about the production challenges on the 737 program last year. And thank you also for taking the time to speak with us about the nature of those concerns. As I know you understand, the safety of our airplanes is of paramount importance to every single person here at Boeing.

As we told you we would, after our last call we shared your concerns with the senior leaders who have direct oversight and responsibility for 737 production and quality. We walked through the issues you raised, in detail, and I can assure you your concerns were taken very seriously. I don't think it will surprise you to learn that ensuring the safety and quality of the 737, including during the recent production challenges, has been the subject of intense focus by BCA.

As I'm sure you know, Boeing closely monitors production quality data, as well as other data related to the overall health of the production system, including, and especially, during periods of disruption like the one experienced last year on the 737 program. Moreover, all of our aircraft are subject to rigorous inspection before they are certified, delivered, and enter into service. Boeing also has access to data concerning the in-service performance and reliability of the 737 fleet. We have seen nothing from any of these sources that would suggest the existence of embedded quality or safety issues, whether or not as a result of the production disruption experienced last year. And I can give you Boeing's assurance that it will continue to closely monitor the production and performance of the 737, as it does for all of its airplanes.

Finally, as to the investigation into the Lion Air incident, rest assured that Boeing is fully supporting the investigation, cooperating with, and under the direction of, the relevant government authorities, including the NTSB, FAA, and NTSC. While that investigation continues, Boeing is strictly prohibited from commenting publicly. I would, however, refer you to the statements and the preliminary report from the investigating authorities for additional information on the incident.

All of us at Boeing share your concern for safety, and, again, we very much appreciate not only your willingness to bring these concerns forward, but also to discuss these concerns with us in detail.

Best regards,

Padraic

From: Ed Pierson [redacted]
Sent: Thursday, February 7, 2019 9:06 AM
To: Luttig (US), Michael <[redacted]@boeing.com>; Fennelly (US), Padraic B <[redacted]@boeing.com>
Subject: RE: 737 Program Safety Concerns

Resending due to transmission error

Judge,

It has been 2 weeks since we last spoke. You encouraged me to call or email you & Padraic if I had any additional questions or thoughts. I appreciate the 2 long conversations we had as a result of my Dec 19th letter to CEO Dennis Muilenburg ref: Lion Air Flight 610 Accident Investigation. I was under the impression you would be getting back to me soon. Please excuse my frustration and the length of this email. From my vantage point the lack of a timely response by the company to serious safety concerns involving the 737 Program, specifically the production of NG, MAX & P-8 airplanes has been disturbing.

I know how swiftly Boeing moves when senior executives, especially the CEO, want to get something done. Resources are made immediately available. Therefore by now, I assume at a minimum you have shared the essence of our phone conversations with the CEO & the 2 technical leads supporting the Lion Air accident investigation (Mike Sinnett & John Hamilton). I also assume a decision has been made whether or not to form a cross functional team to develop a comprehensive, objective assessment of these safety concerns to eliminate the possibility that production problems could have been a root cause to the accident per my recommendation. Additionally and equally important, to ensure other airplanes are not affected as well by these same safety concerns.

If such a team has been formed, they should be well on their way to understanding what was going on within the 737 Program when the Lion Air airplane was being built. Again this is also the same timeframe as the building of the Norwegian 737 airplane that was forced to conduct an emergency landing in Iran. As previously mentioned, I'm willing to share my observations with such a team and to help in any way I can to ensure future tragedies don't occur.

In a good faith effort to be as forthcoming as possible and not knowing if such a team will ever be formed, I want to share my personal observations of the operating environment at the time these airplanes were being built in the Renton factory last year. I'm confident other employees will corroborate these observations. I expressed these concerns to the 737 General Manager in June and July 2018. They include:

Employee Fatigue & Schedule Pressure – Employees worked an excessive amount of extended OT over the course of many months. It is well known that fatigued employees are far more likely to make quality mistakes and to be involved in occupational accidents & near misses. I heard many employees including managers express frustration about how physically tired they were and the impact OT was having on their personal lives. Some employees welcomed the extra money whereas others appeared to wear this as a badge of honor, while still others believed this was an ill-advised effort to produce airplanes. "When are you going to be done, done" was a repeatedly asked question. It was one of many questions used to apply schedule pressure on employees under the guise of holding people personally accountable. In other words this meant how come your crew hasn't finished their jobs and when the heck are you going to be off the plane so others can proceed with their work. This question was oftentimes followed up by "you gave me your word your crew would be off this airplane and they weren't, why not"? Very difficult questions to answer when one factors in all the other variables going on during this timeframe as described below. This relentless schedule pressure was being put on frontline union employees, team leaders and managers by senior management. Understaffed MRB Engineers were also frequently being pressured to process Tags more expeditiously.

Leadership Actions & Inactions – 1st and 2nd line manufacturing managers were peppered with schedule related questions and publicly criticized (berated) during daily status meetings held over the course of many months in the

Town Hall conference room in front of 100+ colleagues. Executives routinely disregarded, bypassed and/or ignored the technical advice of experienced senior managers regarding recovery planning. Efforts to review "Boeing Behaviors" on a daily basis felt shallow and insincere in light of this aggressive communication style. Understandably there were concerns that less experienced managers might model this type of leadership and communication style with their respective teams. In July I specifically asked the GM if he had attended any of these meetings and he said he hadn't.

President McCallister also made what many people felt was a rash decision to immediately implement LSCCs in the 4-81 & 4-82 buildings in 1 week. Reassigning such a large number of employees to the factory floor over such a short period of time without having a clear, agreed upon workflow process added considerable disruption to an already unstable and stressful environment. He made this decision after a weekend site visit & despite the fact there was a cross functional management team working to develop a more seamless implementation plan. There appeared to be absolutely no interest at the executive level in slowing or stopping the production line to give employees and our suppliers the chance to catch up. As I mentioned in our 1st conversation, last June and July I recommended to the 737 GM to stop the production line. In a dismissive manner he told me "we can't do that, I can't do that." I responded by asking "why not, I've seen larger operations shut down for far less safety issues. He challenged me asking "like where?" I responded "in the military and those organizations have national security responsibilities." His response, "well the military isn't a profit making organization."

Quality Issues – QA Inspectors were overloaded with a backlog of inspection requests. There was a shortage of QA inspectors particularly on weekends. Thousands of SATs & hundreds of Tags were piling up. Much higher than normal numbers.

Each SAT represents a quality defect in one of our processes (something is preventing the airplane from being built…damaged parts, missing parts, wrong parts, incomplete build instructions, wrong engineering drawings, equipment missing, equipment not properly working, inspection missing, tool missing, tool needed, etc.). There were plenty of concerns about EWIS compliance. Common problems included wire length issues, connector issues, cannon plug issues, component testing issues, functional test issues, wires chaffed, wires cut, wires pinched, etc. If improperly manufactured, installed or tested wires (electrical & data carrying) can cause intermittent electrical or data errors. We also had plenty of adhesive & electrical bonding/grounding issues going on.

Supply Chain Disruptions – In addition to the widely publicized reports of late deliveries of Spirit fuselages and CFM engines, we had hundreds of other parts that regularly failed to meet load dates from dozens of suppliers. This even included vital parts from internal Boeing suppliers like ESRC & TDRC (e.g., power panels and tubing).

Staffing Constraints – Reports of inadequate number of manufacturing employees and not enough qualified specialists (e.g., electricians, CSMS technicians, QA inspectors). Electrical and CSMS 1st line managers that were consistently pressed to commit to finishing their functional tests were simultaneously pleading for additional qualified resources. In some situations staffing relief was provided whereas in other cases it didn't come or didn't come fast enough. Besides pulling P-8 employees from the P-8 line, hundreds of new employees were added from Everett in the midst of these major recovery operations requiring onboarding assistance and job training. This placed additional burdens on overworked team leaders, crews and managers. Throwing more bodies at the problem didn't seem to help during this timeframe.

Process Deviations – We moved away from standard LMS processes outlined in the 737 Production System Handbook. This was readily apparent with the sudden cancellation of all daily LMS tiered meetings (crew, TL and 1st line manager meetings). These daily tiered meetings served as an important communication backbone allowing crews to review work completed or not completed on the last shift, work needed to be completed, resource requirements, SATs/Tags, etc. Business review meetings were also routinely cancelled which limited the transfer of time-sensitive feedback from compliance audits.

Communication breakdowns – Stripped of these recurring LMS tiered meetings, crews and managers struggled to effectively communicate especially across shifts. There were numerous failures in the use of existing shift to shift

technology to document important turnover information. Instead the new daily status meetings held in the Town Hall Conference Room relied on the use of hundreds of different colored hand written sticky notes, different colored ink, and individual airplane schedules plastered all over the walls. This proved to be very confusing to many people and it was hardly indicative of a world class manufacturing facility.

Safety Incidents – There were a large number of high hazard safety incidents. Having so many employees working away from their normal work location introduced many new hazards (e.g., fall, electrical, hydraulic, etc.). Of course since employees were working such long hours to get the job done, there also seemed to be a reluctance in submitting near miss reports—it was just going to add more work on the part of the person submitting the report.

Functional Test Delays & Failures – All the out of position work largely driven by supply chain problems led to large numbers of Oil On, Power On, EWIS, HIRF & CSMS test delays/failures exacerbating the workload of functional test employees.

Facility Limitations – Because we had so many unfinished airplanes we ran out of available airplane parking spaces. Handicap, manager and executive parking spaces were rapidly converted to airplane parking spots. Some of the sites didn't have adequate airplane grounding adding additional hazards. We were also severely space constrained and didn't have enough space for the storage of wings that were being produced while we waited for fuselages to arrive. So wings were squeezed into different areas in the factory creating additional head and eye hazards.

Equipment Shortcomings – Not enough hydraulic mules, CSMS carts, Power carts, etc. inside and outside the factory and on the flight line. Sensitive test equipment was subjected to damage due to all the transportation movements. Some electrical equipment was also left out in the rain.

Recovery Planning Efforts – IEs were repeatedly tasked to produce and reproduce an inordinate amount of recovery plans, burn down plans, data reports, etc. There seemed to be an unquenchable desire to produce a wide variety of complex reports on the personal whim of a single executive, usually on very short notice. This put a significant drain on IE resources that were also trying to help their respective shops.

Deteriorating Factory Health Metrics – Every single metric used to ascertain factory health was getting record low marks. This included Factory Jobs Behind Schedule (>10 x normal), Average Jobs Behind Schedule per airplane, Travelers, SATs, Tags and Call Board requests. Not surprisingly the higher OT drove higher build costs. We had a lot more airplanes waiting to be finished outside the factory then we had inside the factory being built. Large amounts of incomplete jobs were also dropped on our Preflight crews.

Most of these production problems are not unusual. Employees are usually able to overcome these challenges following standardized processes with leadership support. Taken as a whole, the sheer volume of these issues highlights the considerable & unnecessary risk the company was (is still?) taking to meet ever increasing airplane production rates and delivery schedules. Employees with 20+ years 737 experience stated they had never seen the production system in such bad shape. As you stated, leaders based in Chicago were aware of these recovery issues. Nonetheless being aware of these problems and fixing them are two completely different matters. Just because an airplane flies safely one day doesn't mean it will fly safely the next. This is the insidious nature of imbedded defects. Although I can't speak from firsthand experience now, based on investor reports I believe there is a high probability many of these problems & associated risks are still occurring. Record numbers of airplanes delivered makes for good headlines, but they can belie the reality of production health.

Again to be very clear, I'm not saying anyone did anything deliberate to jeopardize the Lion Air airplane. What I am saying is production mistakes may have been made with this airplane and potentially others, due to the reasons outlined above. I believe Boeing has a duty to proactively support the accident investigation. I can't help but wonder what Boeing's response would be if this had been a U.S. airline accident. I know there are billions of dollars at stake in the contract between Boeing & Lion Air. I'm confident Boeing has the resources to fix these problems. The question is whether or not there is the ethical leadership and will to set aside pride and potential liabilities to get to the truth.

Sincerely, Ed Pierson

From: Ed Pierson <[redacted]
Sent: Tuesday, January 22, 2019 3:50 PM
To: '[redacted]@boeing.com' [redacted]@boeing.com>; '[redacted]@boeing.com' <[redacted]@boeing.com>
Subject: RE: 737 Program Safety Concerns

Judge & Padraic,

Thank you for the teleconference today. I understand you will be talking with some of your colleagues and will get back in touch with me. This is obviously an ongoing urgent matter—it was urgent last summer made even more urgent this fall. I would like to make a recommendation and a request:

Recommendation: As we discussed, looking at program level metrics provides an important, but limited view of what was (is?) going on inside the 737 Program. Forming a cross functional NAR team to conduct an objective, comprehensive assessment of what occurred last year and the current state of the program, would provide an even more important view. This assessment would need to include the analysis of production related data (e.g., quality data) and talking with employees. If such a course of action were to be taken, it would be crucial to talk with frontline employees, union leaders and 1st level managers—not just senior management. This in turn should provide clarity on follow-up actions that need to be taken. Of course such a team would also need to be properly resourced and operate with the full support of the CEO. I have great faith in Boeing employees.

Request: Please provide an estimate of when you will be able to get back in touch with me. Thanks, Ed

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From: Ed Pierson <[redacted]
Sent: Monday, January 21, 2019 8:03 PM
To: '[redacted]boeing.com>; [redacted]' <[redacted]@boeing.com>
Subject: 737 Program Safety Concerns

Judge & Padraic,

FYI. Ref: Tuesday's teleconference. Ed