ATTACHMENT 2

25 March 1997

MEMORANDUM FOR NATIONAL TRANSPORTATION SAFETY BOARD
ATTENTION: GEORGE ANDERSON
490 L'ENFANT PLAZA EAST SW
WASHINGTON DC 20594-5000

FROM: WL/MLSA Building 652
2179 Twelfth Street Suite 1
Wright-Patterson Air Force Base, Ohio 45433-7718

SUBJECT: Review of National Transportation Safety Board (NTSB) Report 96-131

1. The copy of the report you sent has been reviewed and the following comments are offered. First, several photographs are missing and would help in the review. However, a review of what was received was performed.

2. Based on the information contained in report 96-131, fatigue initiated failure is evident. The cracks seem to emanate from a layer of hard alpha on the surface of the bolt hole. Both hardness and microstructure seem to confirm the presence of the hard alpha layer. Was any chemical analysis (other than energy dispersive spectroscopy (EDS)) of the layer performed to determine the stabilizing agent? Were any other bolt holes examined to determine if the condition was present at other locations in the failed disk? Have the overhaul records for the JT8D engine been reviewed to determine if any other disks, manufactured in the same time period as the failed disk, were scrapped because of cracking the bolt holes?

3. It is important to determine if the alpha layer is present in other holes/disks to determine how widespread the problem may be. If the cause is rough machining induced damage that is not removed by subsequent operations, it may be present in other disks. The deformation of the crystal structure in the vicinity of the alpha could indicate a machining problem. However, I would recommend chemically analyzing the alpha layer to determine if alloying played a role. SIMS or Auger would be the preferred choices for such an evaluation.

4. Was this flaw detectable at the last overhaul? If so, the issue may not be as critical because most of the similar defects in other disks were probably eliminated during inspection before failure. At any rate, a look at the current hole machining is probably a good idea.

5. If you have further questions, please contact me at [redacted]

//signed// 3/17/97

LARRY P. PERKINS
Structural Failure Analysis
Materials Integrity Branch
Systems Support Division
Materials Directorate