2.2 Conclusions

(a) Findings

1. Therc'was no evidence of a malfunction or failure of the aircraft's structure, flight instruments, flight controls, or powerplants before impact with the approach light towers.

2. Eastern 66 was conducting an ILS approach to runway 22L at the Kennedy Airport; the first officer was flying the aircraft.

3. When Eastern 66 approached the airport, a very strong thunderstorm. was located along the localizer course near the MM.

4. The pilots of Flying Tiger 161 and Eastern 902 reported that hazardous wind shear conditions existed on the final approach to runway 22L.

5. Eastern 66 received Eastern 902's report on the wind shear but did not receive Flying Tiger 161's report.

6. Wnile penetrating the thunderstorm between 600 and 500 feet, Eastern 66 encountered an increased headwind of about 15 kn; about 500 feet, it encountered a downdraft of about 16 fps. Between 500 feet and 400 feet, the headwind diminished about 5 kn; at 400 feet, the downdraft increased to about 21 fps, and the headwind decreased about 15 kn within 4 seconds.

7. At 400 feet the aircraft began to descend rapidly below the glideslope because of the downdraft and decreased headwind.

8. About 400 feet, the captain stated that he had the approach lights in sight, and he directed the first officer to remain on instrument references.

9. In response to the captain's direction, the first officer replied that he was remaining on instruments; however, he probably began transitioning to the visual references he would need to .complete the approach.

10. Although the first officer might have applied pitch and thrust changes to correct for the aircraft's deviation below the glideslope, any changes made were insufficient to alter significantly the aircraft's high rate of descent and reduced airspeed.

11. The flightcrew probably did not recognize the deviation below the normal approach path until a high descent rate had developed because of their reliance on visual references which were obscured by heavy rain and low visibility.

12. By the time the flightcrew recognized the aircraft's dangerously low altitude, impact with the approach light towers was inevitable because of the aircraft's high rate of descent.

13. Simulator tests showed that approximately 9° of noseup pitch change was needed to stop the aircraft's high rate of descent; also, tests showed that pilots applied less pitch change than was needed and were hesitant to divert their instrument scan to verify that sufficient thrust had been added to compensate for the airspeed loss.

14. The simulator tests were inconclusive as to whether the flightcrew could have avoided the Accident had they relied on and responded rapidly to the flightpath deviations which were probably evident on their flight instruments.

15. The flightcrew of Eastern 66 and the air traffic controllers were aware of the thunderstorm activity on the localizer course to runway 22L.

16. The terminal air traffic system at Kennedy Airport was operating at capacity for at least 30 minutes before the accident, and the air traffic controllers were very busy.

17. After 1551, only one runway could be used for landing because IFR weather conditions prevailed.

18. At least one of the northwest runways (31L) was relatively unexposed to the influences of the thunderstorms.

19. Even though thunderstorm hazards were visible on the approach path, neither the pilots of inbound flights nor air traffic control took action to discontinue the initiation of approaches to runway 22L or to change the landing runway.

20. The accident was not survivable because the fuselage almost completely disintegrated and the occupant restraint systems failed. The unrestrained occupants collided with numerous objects and received multiple extreme impact injuries.

21. The fire department's rapid response and application of fire extinguishing agents prevented fatal burns to nine of the passengers who ultimately survived.

22. The nonfrangible approach light towers caused extensive damage to the aircraft.

(b) Probable Cause

The National Transportation Safety Board determines that the probable cause of this accident was the aircraft's encounter with adverse winds associated with a very strong thunderstorm located astride the ILS localizer course, which resulted in a high descent rate into the nonfrangible approach light towers. The flightcrew's delayed recognition and correction of the high descent rate were probably associated with their reliance upon visual cues rather than on flight instrument references. However, the adverse winds might have been too severe for a successful approach and landing even had they relied upon and responded rapidly to the indications of the flight instruments.

Contributing to the accident was the continued use of runway 22L when it should have become evident to both air traffic control personnel and the flightcrew that a severe weather hazard existed along the approach path.