MAC June 2010

Presented by Bob Ambler

Operational and safety deficiencies at San Diego Intl-Lindbergh (KSAN)

1 May 2006

San Diego Intl-Lindbergh (KSAN) does not meet FAR Part 139.309 Safety Areas as defined in FAA Advisory Circular 150/5300-13 Airport Design. This AC defines Runway Protection Zone (RPZ), Runway Safety Area (RSA), Obstacle Free Zone (OFZ), Runway Object Free Area (OFA), and Clearway Standards. Airline accident statistics, Aviation Week & Space Technology (AW&ST) 5MAR90, demonstrates that a high-speed, high-energy rejected takeoff is a "dangerous maneuver." At KSAN there is a blast fence, Pacific Hwy, and a Shell gas station at the end of runway 9. This makes no allowance for error in a high speed abort when operating at or near runway limit weight on a dry runway. There is NO certification requirement for a wet runway in accelerate-stop distance! Engineered Material Arresting System (EMAS) or "crushable concrete" is planned to be installed this summer 2006, at the end of runway 27. There are no plans to install EMAS at the end of runway 9.

KSAN does not meet FAR Part 77. There are approximately 16 penetrations within the Obstacle Free Zone, varying in height up to 74 feet. In addition, there are 171 penetrations of the FAR Part 77.25 surfaces, varying in height up to 341 feet according to Peat Marwich Main and Company "Evaluation of Lindbergh Field Alternatives," March 1990.

An airline safety article in AW&ST 7JUN93 asserts that, "Approach and landing accidents, which occur in the last 4 min. of flight, remain a primary problem. Landing accidents constitute 41.1% of all hull losses. A study indicates about 70% occurred in environments that did not include an electronic glideslope." KSAN does not have an electronic glideslope to runway 27 on which approximately 90% of landings occur.

With the exception of Juneau, AK, KSAN has the highest landing minimums of any city in the U.S. (5000ft or 1 mile). The airlines spend millions of dollars in certifying airplanes and pilots for category II and III approaches. KSAN does not even have a full category I approach. This translates into delays, diversions, cancellations, lost revenue, and hardship for passengers during low visibility conditions.

When the cloud ceiling goes below 700ft and the visibility is less than 1 3/4 mile, airplanes must land on runway 9. At the same time, many jetliners must depart on runway 27 due to a significant difference in runway limit weight between the two runways. This is a common occurrence during morning hours at certain times of the year. San Diego is the only U.S. city that has daylight delays due to jetliners departing into the flight paths of landing airplanes. San Diego is the only major U.S. city that has a curfew at its primary airport. These operational problems should not be tolerated by the 6th largest city in the U.S.

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structure should be marked and lighted in accordance with the manual.

(c) The acknowledgment states that an aeronautical study of the proposed construction or alteration has resulted in a determination that the construction or alteration:

(1) Would not exceed any standard of subpart C and would not be a hazard to air navigation;

(2) Would exceed a standard of subpart C but would not be a hazard to air navigation; or

(3) Would exceed a standard of subpart C and further aeronautical study is necessary to determine whether it would be a hazard to air navigation, that the sponsor may request within 30 days that further study, and that, pending completion of any further study, it is presumed the construction or alteration would be a hazard to air navigation.

[Doc. No. 1882, 30 FR 1839, Feb. 10, 1965, as amended by Amdt. 77-4, 32 FR 12997, Sept. 13, 1967; Amdt. 77-5, 33 FR 5257, Apr. 2, 1968]

Subpart C—Obstruction Standards

§ 77.21 Scope.

(a) This subpart establishes standards for determining obstructions to air navigation. It applies to existing and proposed manmade objects, objects of natural growth, and terrain. The standards apply to the use of navigable airspace by aircraft and to existing air navigation facilities, such as an air navigation aid, airport, Federal airway, instrument approach or departure procedure, or approved off-airway route. Additionally, they apply to a planned facility or use, or a change in an existing facility or use, if a proposal therefor is on file with the Federal Aviation Administration or an appropriate military service on the date the notice required by § 77.13(a) is filed.

(b) At those airports having defined runways with specially prepared hard surfaces, the primary surface for each such runway extends 200 feet beyond each end of the runway. At those airports having defined strips or pathways that are used regularly for the taking off and landing of aircraft and have been designated by appropriate authority as runways, but do not have specially prepared hard surfaces, each end of the primary surface for each such runway shall coincide with the corresponding end of the runway. At those airports, excluding seaplane bases, having a defined landing and takeoff area with no defined pathways for the landing and taking off of aircraft, a determination shall be made as to which portions of the landing and takeoff area are regularly used as landing and takeoff pathways. Those pathways so determined shall be considered runways and an appropriate primary surface as defined in § 77.25(c) will be considered as being longitudinally centered on each runway so determined, and each end of that primary surface shall coincide with the corresponding end of that runway.

(c) The standards in this subpart apply to the effect of construction or alteration proposals upon an airport if, at the time of filing of the notice required by § 77.13(a), that airport is—

(1) Available for public use and is listed in the Airport Directory of the current Airman's Information Manual or in either the Alaska or Pacific Airman's Guide and Chart Supplement; or

(2) A planned or proposed airport or an airport under construction, that is the subject of a notice or proposal on file with the Federal Aviation Administration, and, except for military airports, it is clearly indicated that that airport will be available for public use; or,

(3) An airport that is operated by an armed force of the United States.

[Doc. No. 1882, 30 FR 1839, Feb. 10, 1965, as amended by Amdt. 77-5, 33 FR 5257, Apr. 2, 1968; Amdt. 77-9, 36 FR 5970, Apr. 1, 1971]

§ 77.23 Standards for determining obstructions.

(a) An existing object, including a mobile object, is, and a future object would be, an obstruction to air navigation if it is of greater height than any of the following heights or surfaces:

(1) A height of 500 feet above ground level at the site of the object.

(2) A height that is 200 feet above ground level or above the established airport elevation, whichever is higher, within 3 nautical miles of the established reference point of an airport, excluding heliports, with its longest runway more than 3,200 feet in actual

length, and that height increases in the proportion of 100 feet for each additional nautical mile of distance from the airport up to a maximum of 500 feet.

(3) A height within a terminal obstacle clearance area, including an initial approach segment, a departure area, and a circling approach area, which would result in the vertical distance between any point on the object and an established minimum instrument flight altitude within that area or segment to be less than the required obstacle clearance.

(4) A height within an en route obstacle clearance area, including turn and termination areas, of a Federal airway or approved off-airway route, that would increase the minimum obstacle clearance altitude.

(5) The surface of a takeoff and landing area of an airport or any imaginary surface established under §77.25, §77.28, or §77.29. However, no part of the takeoff or landing area itself will be considered an obstruction.

(b) Except for traverse ways on or near an airport with an operative ground traffic control service, furnished by an air traffic control tower or by the airport management and coordinated with the air traffic control service, the standards of paragraph (a) of this section apply to traverse ways used or to be used for the passage of mobile objects only after the heights of these traverse ways are increased by:

(1) Seventeen feet for an Interstate Highway that is part of the National System of Military and Interstate Highways where overcrossings are designed for a minimum of 17 feet vertical distance.

(2) Fifteen feet for any other public roadway.

(3) Ten feet or the height of the highest mobile object that would normally traverse the road, whichever is greater, for a private road.

(4) Twenty-three feet for a railroad, and,

(5) For a waterway or any other traverse way not previously mentioned, an amount equal to the height of the highest mobile object that would normally traverse it.

[Doc. No. 10183, 36 FR 5970, Apr. 1, 1971]

§77.25 Civil airport imaginary surfaces.

The following civil airport imaginary surfaces are established with relation to the airport and to each runway. The size of each such imaginary surface is based on the category of each runway according to the type of approach available or planned for that runway. The slope and dimensions of the approach surface applied to each end of a runway are determined by the most precise approach existing or planned for that runway end.

(a) *Horizontal surface.* A horizontal plane 150 feet above the established airport elevation, the perimeter of which is constructed by swinging arcs of specified radii from the center of each end of the primary surface of each runway of each airport and connecting the adjacent arcs by lines tangent to those arcs. The radius of each arc is:

(1) 5,000 feet for all runways designated as utility or visual;

(2) 10,000 feet for all other runways. The radius of the arc specified for each end of a runway will have the same arithmetical value. That value will be the highest determined for either end of the runway. When a 5,000-foot arc is encompassed by tangents connecting two adjacent 10,000-foot arcs, the 5,000-foot arc shall be disregarded on the construction of the perimeter of the horizontal surface.

(b) *Conical surface.* A surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

(c) *Primary surface.* A surface longitudinally centered on a runway. When the runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway; but when the runway has no specially prepared hard surface, or planned hard surface, the primary surface ends at each end of that runway. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline. The width of a primary surface is:

(1) 250 feet for utility runways having only visual approaches.

(2) 500 feet for utility runways having nonprecision instrument approaches.

under this part in sufficient detail to assure the certificate holder and the Administrator of adequate compliance with the Airport Certification Manual and the requirements of this part.

[Doc. No. FAA-2000-7479, 69 FR 6424, Feb. 10, 2004; Amdt. 139-26, 69 FR 31522, June 4, 2004]

§ 139.305 Paved areas.

(a) In a manner authorized by the Administrator, each certificate holder must maintain, and promptly repair the pavement of, each runway, taxiway, loading ramp, and parking area on the airport that is available for air carrier use as follows:

(1) The pavement edges must not exceed 3 inches difference in elevation between abutting pavement sections and between pavement and abutting areas.

(2) The pavement must have no hole exceeding 3 inches in depth nor any hole the slope of which from any point in the hole to the nearest point at the lip of the hole is 45 degrees or greater, as measured from the pavement surface plane, unless, in either case, the entire area of the hole can be covered by a 5-inch diameter circle.

(3) The pavement must be free of cracks and surface variations that could impair directional control of air carrier aircraft, including any pavement crack or surface deterioration that produces loose aggregate or other contaminants.

(4) Except as provided in paragraph (b) of this section, mud, dirt, sand, loose aggregate, debris, foreign objects, rubber deposits, and other contaminants must be removed promptly and as completely as practicable.

(5) Except as provided in paragraph (b) of this section, any chemical solvent that is used to clean any pavement area must be removed as soon as possible, consistent with the instructions of the manufacturer of the solvent.

(6) The pavement must be sufficiently drained and free of depressions to prevent ponding that obscures markings or impairs safe aircraft operations.

(b) Paragraphs (a)(4) and (a)(5) of this section do not apply to snow and ice accumulations and their control, including the associated use of materials, such as sand and deicing solutions.

(c) FAA Advisory Circulars contain methods and procedures for the maintenance and configuration of paved areas that are acceptable to the Administrator.

[Doc. No. FAA-2000-7479, 69 FR 6424, Feb. 10, 2004; Amdt. 139-26, 69 FR 31522, June 4, 2004]

§ 139.307 Unpaved areas.

(a) In a manner authorized by the Administrator, each certificate holder must maintain and promptly repair the surface of each gravel, turf, or other unpaved runway, taxiway, or loading ramp and parking area on the airport that is available for air carrier use as follows:

(1) No slope from the edge of the full-strength surfaces downward to the existing terrain must be steeper than 2:1.

(2) The full-strength surfaces must have adequate crown or grade to assure sufficient drainage to prevent ponding.

(3) The full-strength surfaces must be adequately compacted and sufficiently stable to prevent rutting by aircraft or the loosening or build-up of surface material, which could impair directional control of aircraft or drainage.

(4) The full-strength surfaces must have no holes or depressions that exceed 3 inches in depth and are of a breadth capable of impairing directional control or causing damage to an aircraft.

(5) Debris and foreign objects must be promptly removed from the surface.

(b) FAA Advisory Circulars contain methods and procedures for the maintenance and configuration of unpaved areas that are acceptable to the Administrator.

§ 139.309 Safety areas.

(a) In a manner authorized by the Administrator, each certificate holder must provide and maintain, for each runway and taxiway that is available for air carrier use, a safety area of at least the dimensions that—

(1) Existed on December 31, 1987, if the runway or taxiway had a safety area on December 31, 1987, and if no reconstruction or significant expansion of the runway or taxiway was begun on or after January 1, 1988; or

(2) Are authorized by the Administrator at the time the construction, reconstruction, or expansion began if

construction, reconstruction, or significant expansion of the runway or taxiway began on or after January 1, 1988.

(b) Each certificate holder must maintain its safety areas as follows:

(1) Each safety area must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations.

(2) Each safety area must be drained by grading or storm sewers to prevent water accumulation.

(3) Each safety area must be capable under dry conditions of supporting snow removal and aircraft rescue and firefighting equipment and of supporting the occasional passage of aircraft without causing major damage to the aircraft.

(4) No objects may be located in any safety area, except for objects that need to be located in a safety area because of their function. These objects must be constructed, to the extent practical, on frangibly mounted structures of the lowest practical height, with the frangible point no higher than 3 inches above grade.

(c) FAA Advisory Circulars contain methods and procedures for the configuration and maintenance of safety areas acceptable to the Administrator.

§ 139.311 Marking, signs, and lighting.

(a) *Marking.* Each certificate holder must provide and maintain marking systems for air carrier operations on the airport that are authorized by the Administrator and consist of at least the following:

(1) Runway markings meeting the specifications for takeoff and landing minimums for each runway.

(2) A taxiway centerline.

(3) Taxiway edge markings, as appropriate.

(4) Holding position markings.

(5) Instrument landing system (ILS) critical area markings.

(b) *Signs.* (1) Each certificate holder must provide and maintain sign systems for air carrier operations on the airport that are authorized by the Administrator and consist of at least the following:

(i) Signs identifying taxiing routes on the movement area.

(ii) Holding position signs.

(iii) Instrument landing system (ILS) critical area signs.

(2) Unless otherwise authorized by the Administrator, the signs required by paragraph (b)(1) of this section must be internally illuminated at each Class I, II, and IV airport.

(3) Unless otherwise authorized by the Administrator, the signs required by paragraphs (b)(1)(ii) and (b)(1)(iii) of this section must be internally illuminated at each Class III airport.

(c) *Lighting.* Each certificate holder must provide and maintain lighting systems for air carrier operations when the airport is open at night, during conditions below visual flight rules (VFR) minimums, or in Alaska, during periods in which a prominent unlighted object cannot be seen from a distance of 3 statute miles or the sun is more than six degrees below the horizon. These lighting systems must be authorized by the Administrator and consist of at least the following:

(1) Runway lighting that meets the specifications for takeoff and landing minimums, as authorized by the Administrator, for each runway.

(2) One of the following taxiway lighting systems:

(i) Centerline lights.

(ii) Centerline reflectors.

(iii) Edge lights.

(iv) Edge reflectors.

(3) An airport beacon.

(4) Approach lighting that meets the specifications for takeoff and landing minimums, as authorized by the Administrator, for each runway, unless provided and/or maintained by an entity other than the certificate holder.

(5) Obstruction marking and lighting, as appropriate, on each object within its authority that has been determined by the FAA to be an obstruction.

(d) *Maintenance.* Each certificate holder must properly maintain each marking, sign, or lighting system installed and operated on the airport. As used in this section, to "properly maintain" includes cleaning, replacing, or repairing any faded, missing, or nonfunctional item; keeping each item unobscured and clearly visible; and ensuring that each item provides an accurate reference to the user.

Chapter 1. REGULATORY REQUIREMENTS AND DEFINITION OF TERMS

1. GENERAL. Section 103 of the Federal Aviation Act of 1958 states in part, "In the exercise and performance of his power and duties under this Act, the Secretary of Transportation shall consider the following, among other things, as being in the public interest: (a) The regulation of air commerce in such manner as to best promote its development and safety and fulfill the requirements of defense; (b) The promotion, encouragement, and development of civil aeronautics . . . ."

This public charge, in effect, requires the development and maintenance of a national system of safe, delay-free, and cost-effective airports. The use of the standards and recommendations contained in this publication in the design of airports supports this public charge. These standards and recommendations, however, do not limit or regulate the operations of aircraft.

2. DEFINITIONS. As used in this publication, the following terms mean:

Aircraft Approach Category. A grouping of aircraft based on 1.3 times their stall speed in their landing configuration at the certificated maximum flap setting and maximum landing weight at standard atmospheric conditions. The categories are as follows:

Category A: Speed less than 91 knots.

Category B: Speed 91 knots or more but less than 121 knots.

Category C: Speed 121 knots or more but less than 141 knots.

Category D: Speed 141 knots or more but less than 166 knots.

Category E: Speed 166 knots or more.

Airplane Design Group (ADG). A grouping of airplanes based on wingspan or tail height. Where an airplane is in two categories, the most demanding category should be used. The groups are as follows:

Group I: Up to but not including 49 feet (15 m) wingspan or tail height up to but not including 20 feet.

Group II: 49 feet (15 m) up to but not including 79 feet (24 m) wingspan or tail height from 20 up to but not including 30 feet.

Group III: 79 feet (24 m) up to but not including 118 feet (36 m) wingspan or tail height from 30 up to but not including 45 feet.

Group IV: 118 feet (36 m) up to but not including 171 feet (52 m) wingspan or tail height from 45 up to but not including 60 feet.

Group V: 171 feet (52 m) up to but not including 214 feet (65 m) wingspan or tail height from 60 up to but not including 66 feet.

Group VI: 214 feet (65 m) up to but not including 262 feet (80 m) wingspan or tail height from 66 up to but not including 80 feet.

Table 1-1. Airplane Design Groups (ADG)

Group #	Tail Height (ft)	Wingspan (ft)
I	<20	<49
II	20 - <30	49 - <79
III	30 - <45	79 - <118
IV	45 - <60	118 - <171
V	60 - <66	171 - <214
VI	66 - <80	214 - <262

Airport Elevation. The highest point on an airport's usable runway expressed in feet above mean sea level (MSL).

Airport Layout Plan (ALP). The plan of an airport showing the layout of existing and proposed airport facilities.

Airport Reference Point (ARP). The latitude and longitude of the approximate center of the airport.

Blast Fence. A barrier used to divert or dissipate jet blast or propeller wash.

Building Restriction Line (BRL). A line which identifies suitable building area locations on airports.

Clear Zone. See Runway Protection Zone.

Clearway (CWY). A defined rectangular area beyond the end of a runway cleared or suitable for use in lieu of runway to satisfy takeoff distance requirements.

Compass Calibration Pad. An airport facility used for calibrating an aircraft compass.

Declared Distances. The distances the airport owner declares available for the airplane's takeoff run, takeoff distance, accelerate-stop distance, and landing distance requirements. The distances are:

Takeoff run available (TORA). The runway length declared available and suitable for the ground run of an airplane taking off;

Takeoff distance available (TODA). The TORA plus the length of any remaining runway or clearway (CWY) beyond the far end of the TORA;

NOTE: The full length of TODA may not be usable for all takeoffs because of obstacles in the departure area. The usable TODA length is aircraft performance dependent and, as such, must be determined by the aircraft operator before each takeoff and requires knowledge of the location of each controlling obstacle in the departure area.

Accelerate-stop distance available (ASDA). The runway plus stopway (SWY) length declared available and suitable for the acceleration and deceleration of an airplane aborting a takeoff; and

Landing distance available (LDA). The runway length declared available and suitable for a landing airplane.

Fixed By Function NAVAID. An air navigation aid (NAVAID) that must be positioned in a particular location in order to provide an essential benefit for civil aviation is fixed by function. Exceptions are:

a. Equipment shelters, junction boxes, transformers, and other appurtenances that support a fixed by function NAVAID *are not* fixed by function unless operational requirements require them to be located in close proximity to the NAVAID.

b. Some NAVAIDs, such as localizers, can provide beneficial performance even when they are not located at their optimal location. These NAVAIDS are not fixed by function.

Frangible NAVAID. A navigational aid (NAVAID) which retains its structural integrity and stiffness up to a designated maximum load, but on impact from a greater load, breaks, distorts, or yields in such a manner as to present the minimum hazard to aircraft. The term NAVAID includes electrical and visual air navigational aids, lights, signs, and associated supporting equipment.

Hazard to Air Navigation. An object which, as a result of an aeronautical study, the FAA determines will have a substantial adverse effect upon the safe and efficient use of navigable airspace by aircraft, operation of air navigation facilities, or existing or potential airport capacity.

Large Airplane. An airplane of more than 12,500 pounds (5 700 kg) maximum certificated takeoff weight.

Low Impact Resistant Supports (LIRS). Supports designed to resist operational and environmental static loads and fail when subjected to a shock load such as that from a colliding aircraft.

Object. Includes, but is not limited to above ground structures, NAVAIDs, people, equipment, vehicles, natural growth, terrain, and parked aircraft.

Object Free Area (OFA). An area on the ground centered on a runway, taxiway, or taxilane centerline provided to enhance the safety of aircraft operations by having the area free of objects, except for objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes.

Obstacle Clearance Surface (OCS). An inclined obstacle evaluation surface associated with a glidepath. The separation between this surface and the glidepath angle at any given distance from GPI defines the MINIMUM required obstruction clearance at that point.

Obstacle Free Zone (OFZ). The OFZ is the airspace below 150 feet (45 m) above the established airport elevation and along the runway and extended runway centerline that is required to be clear of all objects, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function, in order to provide clearance protection for aircraft landing or taking off from the runway, and for missed approaches. The OFZ is sub-divided as follows:

Runway OFZ. The airspace above a surface centered on the runway centerline.

Inner-approach OFZ. The airspace above a surface centered on the extended runway centerline. It applies to runways with an approach lighting system.

Inner-transitional OFZ. The airspace above the surfaces located on the outer edges of the runway OFZ and the inner-approach OFZ. It applies to runways with approach visibility minimums lower than 3/4-statute mile (1 200 m).

Obstruction to Air Navigation. An object of greater height than any of the heights or surfaces presented in Subpart C of Code of Federal Regulation (14 CFR), Part 77. (Obstructions to air navigation are presumed to be hazards to air navigation until an FAA study has determined otherwise.)

Precision Approach Category I (CAT I) Runway. A runway with an instrument approach procedure which provides for approaches to a decision height (DH) of not less than 200 feet (60 m) and visibility of not less than 1/2 mile (800 m) or Runway Visual Range (RVR) 2400 (RVR 1800 with operative touchdown zone and runway centerline lights).

Table 3-3. Runway design standards for aircraft approach categories C & D

(Refer also to Appendix 16 for the establishment of new approaches)

ITEM	DIM 1/	AIRPLANE DESIGN GROUP					
		I	II	III	IV	V	VI
Runway Length	A	- Refer to paragraph 301 -					
Runway Width	B	100 ft	100 ft	100 ft 2/	150 ft	150 ft	200 ft
		30 m	30 m	30 m 2/	45 m	45 m	60 m
Runway Shoulder Width 3/		10 ft	10 ft	20 ft 2/	25 ft	35 ft	40 ft
		3 m	3 m	6 m 2/	7.5 m	10.5 m	12 m
Runway Blast Pad Width		120 ft	120 ft	140 ft 2/	200 ft	220 ft	280 ft
		36 m	36 m	42 m 2/	60 m	66 m	84 m
Runway Blast Pad Length		100 ft	150 ft	200 ft	200 ft	400 ft	400 ft
		30 m	45 m	60 m	60 m	120 m	120 m
Runway Safety Area Width 4/	C	500 ft	500 ft	500 ft	500 ft	500 ft	500 ft
		150 m	150 m	150 m	150 m	150 m	150 m
Runway Safety Area Length Prior to Landing Threshold 5/, 6/		600 ft	600 ft	600 ft	600 ft	600 ft	600 ft
		180 m	180 m	180 m	180 m	180 m	180 m
Runway Safety Area Length Beyond RW End 5/, 6/	P	1,000 ft	1,000 ft	1,000 ft	1,000 ft	1,000 ft	1,000 ft
		300 m	300 m	300 m	300 m	300 m	300 m
Obstacle Free Zone Width and Length		- Refer to paragraph 306 -					
Runway Object Free Area Width	Q	800 ft	800 ft	800 ft	800 ft	800 ft	800 ft
		240 m	240 m	240 m	240 m	240 m	240 m
Runway Object Free Area Length Beyond RW End 7/	R	1,000 ft	1,000 ft	1,000 ft	1,000 ft	1,000 ft	1,000 ft
		300 m	300 m	300 m	300 m	300 m	300 m

1/ Letters correspond to the dimensions on figures 2-1 and 2-3.

2/ For Airplane Design Group III serving airplanes with maximum certificated takeoff weight greater than 150,000 pounds (68,100 kg), the standard runway width is 150 feet (45 m), the shoulder width is 25 feet (7.5 m), and the runway blast pad width is 200 feet (60 m).

3/ Design Groups V and VI normally require stabilized or paved shoulder surfaces.

4/ For Airport Reference Code C-I and C-II, a runway safety area width of 400 feet (120 m) is permissible.

5/ The runway safety area (RSA) length begins at each runway end when a stopway is not provided. When a stopway is provided, the length begins at the stopway end.

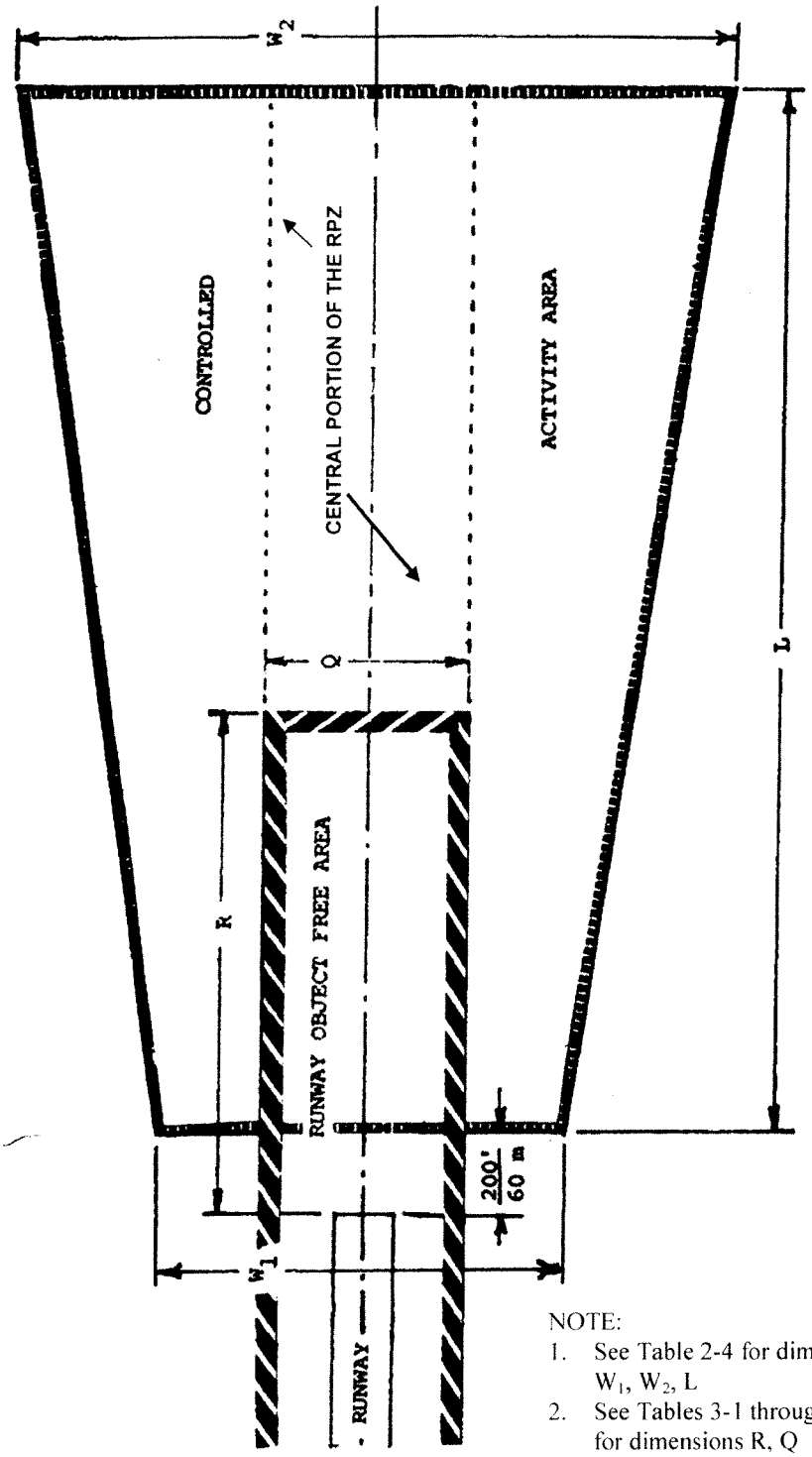
6/ The standard RSA length beyond the runway end may be reduced to the standard RSA length prior to landing threshold if a standard Engineered Materials Arresting System (EMAS) is provided. To qualify for this reduction, the EMAS installation must provide the ability to stop the critical aircraft exiting the end of the runway at 70 knots, and the runway must provide either instrument or visual vertical guidance for approaches in the opposite direction. See AC 150/5220-22.

7/ The runway object free area length beyond the end of the runway never exceeds the standard RSA length beyond the runway end as provided by note 6 above.

Table 2-4. Runway protection zone (RPZ) dimensions

Approach Visibility Minimums 1/	Facilities Expected To Serve	Dimensions			
		Length L Feet (meters)	Inner Width W_1 feet (meters)	Outer Width W_2 feet (meters)	RPZ acres
Visual And Not lower than 1-Mile (1 600 m)	Small Aircraft Exclusively	1,000 (300)	250 (75)	450 (135)	8.035
	Aircraft Approach Categories A & B	1,000 (300)	500 (150)	700 (210)	13.770
	Aircraft Approach Categories C & D	1,700 (510)	500 (150)	1,010 (303)	29.465
Not lower than ¾-Mile (1 200 m)	All Aircraft	1,700 (510)	1,000 (300)	1,510 (453)	48.978
Lower than ¾-Mile (1 200 m)	All Aircraft	2,500 (750)	1,000 (300)	1,750 (525)	78.914

1/ The RPZ dimensional standards are for the runway end with the specified approach visibility minimums. The departure RPZ dimensional standards are equal to or less than the approach RPZ dimensional standards. When a RPZ begins other than 200 feet (60 m) beyond the runway end, separate approach and departure RPZs should be provided. Refer to Appendix 14 for approach and departure RPZs.



NOTE:
1. See Table 2-4 for dimension W_1, W_2, L
2. See Tables 3-1 through 3-3 for dimensions R, Q

Figure 2-3. Runway protection zone

FAR 139

Chapter 3. RUNWAY DESIGN

300. INTRODUCTION. This chapter presents standards for runways and runway associated elements such as shoulders, blast pads, runway safety areas, obstacle free zones (OFZ), object free areas (OFA), clearways, and stopways. Tables 3-1, 3-2, and 3-3 present the standard widths and lengths for runway and runway-associated elements. Also included are design standards and recommendations for rescue and firefighting access roads. At new airports, the RSA and ROFA lengths and the RPZ location standards are tied to runway ends. At existing constrained airports, these criteria may, on a case-by-case basis, be applied with respect to declared distances ends. See appendix 14.

301. RUNWAY LENGTH. AC 150/5325-4 and airplane flight manuals provide guidance on runway lengths for airport design, including declared distance lengths. The computer program cited in appendix 11 may be used to determine the recommended runway length for airport design.

302. RUNWAY WIDTH. Tables 3-1, 3-2, and 3-3 present runway width standards that consider operations conducted during reduced visibility.

303. RUNWAY SHOULDERS. Runway shoulders provide resistance to blast erosion and accommodate the passage of maintenance and emergency equipment and the occasional passage of an airplane veering from the runway. Tables 3-1, 3-2, and 3-3 present runway shoulder width standards. A natural surface, e.g., turf, normally reduces the possibility of soil erosion and engine ingestion of foreign objects. Soil with turf not suitable for this purpose requires a stabilized or low cost paved surface. Refer to chapter 8 for further discussion. Figure 3-1 depicts runway shoulders.

304. RUNWAY BLAST PAD. Runway blast pads provide blast erosion protection beyond runway ends. Tables 3-1, 3-2, and 3-3 contain the standard length and width for blast pads for takeoff operations requiring blast erosion control. Refer to chapter 8 for further discussion. Figure 3-1 depicts runway blast pads.

305. RUNWAY SAFETY AREA (RSA). The runway safety area is centered on the runway centerline. Tables 3-1, 3-2, and 3-3 present runway safety area dimensional standards. Figure 3-1 depicts the runway safety area. Appendix 8 discusses the runway safety area's evolution.

a. Design Standards. The runway safety area shall be:

(1) cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations;

(2) drained by grading or storm sewers to prevent water accumulation;

(3) capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft; and

(4) free of objects, except for objects that need to be located in the runway safety area because of their function. Objects higher than 3 inches (7.6 cm) above grade should be constructed, to the extent practicable, on low impact resistant supports (frangible mounted structures) of the lowest practical height with the frangible point no higher than 3 inches (7.6 cm) above grade. Other objects, such as manholes, should be constructed at grade. In no case should their height exceed 3 inches (7.6 cm) above grade.

b. Construction Standards. Compaction of runway safety areas shall be to FAA specification P-152 found in AC 150/5370-10.

c. Sub-standard RSAs. RSA standards cannot be modified or waived like other airport design standards. The dimensional standards remain in effect regardless of the presence of natural or man-made objects or surface conditions that might create a hazard to aircraft that leave the runway surface. Facilities, including NAVAIDs, that would not normally be permitted in an RSA should not be installed inside the standard RSA dimensions even when the RSA does not meet standards in other respects. A continuous evaluation of all practicable alternatives for improving each sub-standard RSA is required until it meets all standards for grade, compaction, and object frangibility. FAA Order 5200.8, Runway Safety Area Program, explains the process for conducting this evaluation. Each FAA regional Airports division manager has a written determination of the best practicable alternative(s) for improving each RSA. Therefore, runway and RSA improvement projects must comply with the determination of the FAA regional Airports division manager.

d. Threshold Displacement. Incremental improvements that involve the displacement of a landing threshold need to be carefully planned so that they do not incur unnecessary costs or create situations that could compromise operational safety.

(1) Runway thresholds that are displaced temporarily pending the planned relocation of objects (such as Localizer antennas) should consider the extra costs associated with re-arranging the runway lights, approach lights and navigational aids.

(2) The displacement of a threshold that does not also include relocation of the lead-in taxiway can create an undesirable and confusing operating environment for the pilot. (See paragraph 204.)

e. Allowance for Navigational Aids. The RSA is intended to enhance the margin of safety for landing or departing aircraft. Accordingly, the design of an RSA must account for navigational aids that might impact the effectiveness of the RSA:

(1) RSA grades sometimes require approach lights to be mounted on massive towers that could create a hazard for aircraft. Therefore, consider any practicable RSA construction to a less demanding grade than the standard grade to avoid the need for massive structures.

(2) Instrument landing system (ILS) facilities (glide slopes and localizers) are not usually required to be located inside the RSA. However, they do require a graded area around the antenna. (See chapter 6 for more information on the siting of ILS facilities.) RSA construction that ends abruptly in a precipitous drop-off can result in design proposals where the facility is located inside the RSA. Therefore, consider any practicable RSA construction beyond the standard dimensions that could accommodate ILS facilities if and when they are installed.

306. OBSTACLE FREE ZONE (OFZ). The OFZ clearing standard precludes taxiing and parked airplanes and object penetrations, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function. The runway OFZ and, when applicable, the precision OFZ, the inner-approach OFZ, and the inner-transitional OFZ comprise the obstacle free zone (OFZ). Figures 3-2, 3-3, 3-4, 3-5,and 3-6 show the OFZ.

a. Runway OFZ (ROFZ). The runway OFZ is a defined volume of airspace centered above the runway centerline. The runway OFZ is the airspace above a surface whose elevation at any point is the same as the elevation of the nearest point on the runway centerline. The runway OFZ extends 200 feet (60 m) beyond each end of the runway. Its width is as follows:

(1) For runways serving small airplanes exclusively:

(a) 300 feet (90 m) for runways with lower than 3/4-statute mile (1 200 m) approach visibility minimums.

(b) 250 feet (75 m) for other runways serving small airplanes with approach speeds of 50 knots or more.

(c) 120 feet (36 m) for other runways serving small airplanes with approach speeds of less than 50 knots.

(2) For runways serving large airplanes, 400 feet (120 m).

b. Inner-approach OFZ. The inner-approach OFZ is a defined volume of airspace centered on the approach area. It applies only to runways with an approach lighting system. The inner-approach OFZ begins 200 feet (60 m) from the runway threshold at the same elevation as the runway threshold and extends 200 feet (60 m) beyond the last light unit in the approach lighting system. Its width is the same as the runway OFZ and rises at a slope of 50 (horizontal) to 1 (vertical) from its beginning.

c. Inner-transitional OFZ. The inner-transitional OFZ is a defined volume of airspace along the sides of the runway OFZ and inner-approach OFZ. It applies only to runways with lower than 3/4-statute mile (1 200 m) approach visibility minimums.

(1) For runways serving small airplanes exclusively, the inner-transitional OFZ slopes 3 (horizontal) to 1 (vertical) out from the edges of the runway OFZ and inner-approach OFZ to a height of 150 feet (45 m) above the established airport elevation.

(2) For runways serving large airplanes, separate inner-transitional OFZ criteria apply for Category (CAT) I and CAT II/III runways.

(a) For CAT I runways, the inner-transitional OFZ begins at the edges of the runway OFZ and inner-approach OFZ, then rises vertically for a height "H", and then slopes 6 (horizontal) to 1 (vertical) out to a height of 150 feet (45 m) above the established airport elevation.

1) In U.S. customary units,

$H_{feet} = 61 - 0.094(S_{feet}) - 0.003(E_{feet})$.

2) In SI units,

$H_{meters} = 18.4 - 0.094(S_{meters}) - 0.003(E_{meters})$.

3) S is equal to the most demanding wingspan of the airplanes using the runway and E is equal to the runway threshold elevation above sea level.

(b) For CAT II/III runways, the inner-transitional OFZ begins at the edges of the runway OFZ and inner-approach OFZ, then rises vertically for a height "H", then slopes 5 (horizontal) to 1 (vertical) out to a

distance "Y" from runway centerline, and then slopes 6 (horizontal) to 1 (vertical) out to a height of 150 feet (45 m) above the established airport elevation.

1) In U.S. customary units,

$H_{feet} = 53 - 0.13(S_{feet}) - 0.0022(E_{feet})$ and distance

$Y_{feet} = 440 + 1.08(S_{feet}) - 0.024(E_{feet})$.

2) In SI units,

$H_{meters} = 16 - 0.13(S_{meters}) - 0.0022(E_{meters})$ and distance

$Y_{meters} = 132 + 1.08(S_{meters}) - 0.024(E_{meters})$.

3) S is equal to the most demanding wingspan of the airplanes using the runway and E is equal to the runway threshold elevation above sea level. Beyond the distance "Y" from runway centerline the inner-transitional CAT II/III OFZ surface is identical to that for the CAT I OFZ.

d. Precision OFZ. The Precision Obstacle Free Zone (POFZ) is defined as a volume of airspace above an area beginning at the runway threshold, at the threshold elevation, and centered on the extended runway centerline, 200 feet (60m) long by 800 feet (240m) wide. See figure 3-6.

The surface is in effect only when all of the following operational conditions are met:

(1) Vertically guided approach

(2) Reported ceiling below 250 feet and/or visibility less than ¾ statute mile (or RVR below 4000 feet)

(3) An aircraft on final approach within two (2) miles of the runway threshold.

When the POFZ is in effect, a wing of an aircraft holding on a taxiway waiting for runway clearance may penetrate the POFZ; however neither the fuselage nor the tail may infringe on the POFZ.

The POFZ is applicable at all runway ends including displaced thresholds.

Note: POFZ takes effect no later than January 1, 2007 for all runway ends at which it applies.

307. OBJECT FREE AREA. The runway object free area (OFA) is centered on the runway centerline. The runway OFA clearing standard requires clearing the OFA of above ground objects protruding above the runway safety area edge elevation. Except where precluded by other clearing standards, it is acceptable to place objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes and to taxi and hold aircraft in the OFA. Objects non-essential for air navigation or aircraft ground maneuvering purposes are not to be placed in the OFA. This includes parked airplanes and agricultural operations. Tables 3-1, 3-2, and 3-3 specify the standard dimensions of the runway OFA. Extension of the OFA beyond the standard length to the maximum extent feasible is encouraged. See figure 2-3.

308. CLEARWAY STANDARDS. The clearway (See figure 3-7) is a clearly defined area connected to and extending beyond the runway end available for completion of the takeoff operation of turbine-powered airplanes. A clearway increases the allowable airplane operating takeoff weight without increasing runway length.

a. Dimensions. The clearway must be at least 500 feet (150 m) wide centered on the runway centerline. The practical limit for clearway length is 1,000 feet (300 m).

b. Clearway Plane Slope. The clearway plane slopes upward with a slope not greater than 1.25 percent.

c. Clearing. Except for threshold lights no higher than 26 inches (66 cm) and located off the runway sides, no object or terrain may protrude through the clearway plane. The area over which the clearway lies need not be suitable for stopping aircraft in the event of an aborted takeoff.

d. Control. An airport owner interested in providing a clearway should be aware of the requirement that the clearway be under its control, although not necessarily by direct ownership. The purpose of such control is to ensure that no fixed or movable object penetrates the clearway plane during a takeoff operation.

e. Notification. When a clearway is provided, the clearway length and the declared distances, as specified in appendix 14, paragraph 7, shall be provided in the Airport/Facility Directory (and in the Aeronautical Information Publication (AIP), for international airports) for each operational direction.

309. STOPWAY STANDARDS. A stopway is an area beyond the takeoff runway, centered on the extended runway centerline, and designated by the airport owner for use in decelerating an airplane during an aborted takeoff. It must be at least as wide as the runway and able to support an airplane during an aborted takeoff without causing structural damage to the airplane. Their limited use and high construction cost, when compared to a full-strength runway that is usable in both directions, makes their construction less cost effective. See figure 3-8. When a stopway is provided, the stopway length and the declared distances, as specified in appendix 14, paragraph 7, shall be provided in the Airport/Facility Directory (and in the Aeronautical Information Publication for international airports) for each operational direction.

310. RESCUE AND FIREFIGHTING ACCESS. Rescue and firefighting access roads are normally needed to provide unimpeded two-way access for rescue and firefighting equipment to potential accident areas. Connecting these access roads, to the extent practical, with the operational surfaces and other roads will facilitate aircraft rescue and firefighting operations.

a. Recommendation. It is recommended that the entire runway safety area (RSA) and runway protection zone (RPZ) be accessible to rescue and firefighting vehicles so that no part of the RSA or RPZ is more than 330 feet (100 m) from either an all weather road or a paved operational surface. Where an airport is adjacent to a body of water, it is recommended that boat launch ramps with appropriate access roads be provided.

b. All Weather Capability. Rescue and firefighting access roads are all weather roads designed to support rescue and firefighting equipment traveling at normal response speeds. Establish the widths of the access roads on a case-by-case basis considering the type(s) of rescue and firefighting equipment available and planned at the airport. The first 300 feet (90 m) adjacent to a paved operational surface should be paved. Where an access road crosses a safety area, the safety area standards for smoothness and grading control. For other design and construction features, use local highway specifications.

c. Road Usage. Rescue and firefighting access roads are special purpose roads that supplement but do not duplicate or replace sections of a multi-purpose road system. Restricting their use to rescue and firefighting access equipment precludes their being a hazard to air navigation.

311. to 399. RESERVED.

Runway Safety Improvement Act of 2008 (Introduced in Senate)

S 2941 IS

110th CONGRESS

2d Session

S. 2941

To improve airport runway safety, and for other purposes.

IN THE SENATE OF THE UNITED STATES

April 30, 2008

Mr. LAUTENBERG introduced the following bill; which was read twice and referred to the Committee on Commerce, Science, and Transportation

A BILL

To improve airport runway safety, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the `Runway Safety Improvement Act of 2008'.

SEC. 2. STRATEGIC PLAN FOR RUNWAY SAFETY.

(a) In General- Not later than 6 months after the date of the enactment of this Act, the Administrator of the Federal Aviation Administration (referred to in this Act as the `Administrator') shall develop and submit to Congress a report that contains a strategic runway safety plan.

(b) Contents of Plan- The strategic runway safety plan submitted under subsection (a) shall--

(1) include--

(A) goals to improve runway safety;

(B) a description of near- and longer-term actions designed to reduce the severity, number, and rate of runway incursions;

(C) time frames and resources needed for the actions described in subparagraph (B); and

(D) a plan to implement a continuous evaluative process to track performance toward the goals referred to in subparagraph (A); and

(2) address the increased runway safety risk associated with the expected increases in the volume of air traffic.

(c) Audit of Strategic Runway Safety Plan- The Comptroller General of the United States shall--

(1) conduct an audit of the plan developed under subsection (a); and

(2) submit periodic reports to the Committee on Commerce, Science, and Transportation of the Senate and Committee on Transportation and Infrastructure of the House of Representatives that describe--

(A) the efficacy of the runway safety plan in reducing runway safety risks; and

(B) the progress of the Federal Aviation Administration in complying with the plan.

SEC. 3. TECHNOLOGY IMPROVEMENTS.

(a) Plan and Schedule for Installation and Deployment of Systems To Provide Alerts of Potential Runway Incursions-

(1) DEPLOYMENT PLAN- Not later than December 31, 2008, the Administrator shall submit to Congress a plan for the installation of and deployment schedule for systems to alert air traffic controllers and flight crews of potential runway incursions at--

(A) the 35 commercial airports in the United States that are most at risk of runway incursions; and

(B) general aviation airports identified by the Administrator as being most at risk of runway incursions.

(2) CONTENTS- The plan submitted under paragraph (1) shall--

(A) ensure existing technology for improved situational awareness is available to pilots of commercial and large general aviation aircraft;

(B) enhance the value of investments in surface movement detection systems by ensuring that runway incursion alert data collected by such systems are automatically and directly transmitted to flight crews; and

(C) ensure that airports most at risk of runway incursions receive priority for the installation of advanced surface movement detection systems.

(3) OBJECTIVES- The installation and deployment schedule required under paragraph (1) shall ensure that--

(A) not later than March 31, 2009, the Administrator certifies an integrated aircraft and ground-based capability that transmits runway incursion alerts generated by advanced surface movement detection systems to pilots without controller intervention;

(B) not later than December 31, 2009, capability providing aural indication of own aircraft position relative to airport runways is installed on--

(i) all aircraft operated pursuant to part 121 or 135 of title 14, Code of Federal Regulations, with more than 10 seats; and

(ii) all turbine-powered aircraft operated pursuant to part 91 of such title 14, with more than 6 seats;

(C) not later than June 30, 2010, the Administrator provides the capability described in subparagraph (A) at all airports equipped with advanced surface movement detection systems;

(D) not later than December 31, 2010, all aircraft described in subparagraph (B) at airports equipped with advanced surface movement detection systems are equipped with the capability to receive, process, and present runway incursion alerts to pilots; and

(E) a schedule is published for the equipage of aircraft operated pursuant to part 125 or 129 of title 14, Code of Federal Regulations.

(b) Review of Implementation of Advanced Surface Movement Detection Systems- The Inspector General of the Department of Transportation shall--

(1) review the installation of each advanced surface movement detection system funded by the Administrator to ensure that each system functions in accordance with the product's certification by the Administrator; and

(2) submit an annual report to the Committee on Commerce, Science, and Transportation of the Senate and Committee on Transportation and Infrastructure of the House of Representatives that describes the status of the proper implementation of each system, including a review of the system's--

(A) reliability to ensure it is not susceptible to failures to generate timely alerts for controllers to take appropriate action; and

(B) ability to successfully operates in all climate conditions in which aircraft operations are conducted at the airport.

SEC. 4. INFRASTRUCTURE UPGRADES.

(a) Authorization of Appropriations for Technology Investments- There are authorized to be appropriated to the Administrator, from amounts deposited in the Airport and Airway Trust Fund established under section 9502(d) of the Internal Revenue Code of 1986, to install systems designed to reduce the potential for runway incursions through the purchase and installation of advanced surface movement detection systems, and cockpit-direct audible runway incursion warning systems--

(1) $41,000,000 for fiscal year 2009;

(2) $42,250,000 for fiscal year 2010; and

(3) $45,000,000 for fiscal year 2011.

(b) Authorization of Appropriations for Near-Term Improvements- There are authorized to be appropriated to the Administrator, from amounts deposited in the Airport and Airways Trust Fund established under section 9502(d) of the Internal Revenue Code of 1986, to reduce the potential for runway incursions through the purchase and installation of appropriate automatic equipment, including runway occupancy alerting and warning equipment, perimeter taxiways, and runway status lights--

(1) $40,000,000 for fiscal year 2009;

(2) $45,000,000 for fiscal year 2010; and

(3) $55,000,000 for fiscal year 2011.

(c) Authorization of Appropriations for Runway Safety Area Improvements- There are authorized to be appropriated to the Administrator, from amounts deposited in the Airport and Airway Trust Fund established under section 9502(d) of the Internal Revenue Code of 1986, to improve runway safety areas to meet Federal Aviation Administration standards--

(1) $20,000,000 for fiscal year 2009;

(2) $25,000,000 for fiscal year 2010; and

(3) $30,000,000 for fiscal year 2011.

(d) Codification of Runway Safety Design Standard Compliance Requirement From Public Law 109-115- Section 44727 is amended by adding at the end the following:

`(c) Runway Safety Design Standard Compliance- Not later than December 31, 2015, the owner or operator of each airport described in section 44706(a) shall improve the airport's runway safety areas to comply with the Federal Aviation Administration design standards required under part 139 of title 14, Code of Federal Regulations.'.

(e) Annual Report on Runway Safety Area Compliance- The Administrator shall annually submit to the Committee on Commerce, Science, and Transportation of the Senate and Committee on Transportation and Infrastructure of the House of Representatives a report that describes the progress of the Administration toward improving the runway safety areas at airports described in section 44706(a) of title 49, United States Code.

SEC. 5. REVIEW OF RUNWAY AND TAXIWAY LIGHTING AND MARKINGS.

(a) In General- Not later than 180 days after the date of the enactment of this Act, the Administrator shall--

(1) review the type of runway and taxiway lighting (both daytime and nighttime configurations) and markings at airports described in section 44706(a) of title 49, United States Code, for compliance with standards issued by the Federal Aviation Administration; and

(2) identify runways on which nonstandard lighting and markings, including variance in illumination levels and standard colors used on runways and taxiways, may contribute, or may have contributed, to operational errors or incidents.

(b) Report- Not later than 60 days after the completion of the review under subsection (a), the Administrator shall submit to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives a report that--

(1) describes the variance in lighting conditions and markings at airport runways described in subsection (a);

(2) identifies those runways that are most likely to contribute to operational errors and incidents; and

(3) includes a plan for remedying variance in lighting conditions and markings at nonstandard runways, including associated costs.

SEC. 6. MONITORING AND RECORDING EQUIPMENT FOR NAVIGATION AND LIGHTING AIDS.

(a) In General- The Administrator, in consultation with the Chairman of the National Transportation Safety Board, shall evaluate the potential for improving safety and accident investigations through the use of systems, including existing technologies, that record and enable the archival of the operational status of lighting systems on the movement areas of, or that are critical to the safe operations at, airports described in section 44706(a) of title 49, United States Code.

(b) Report- Not later than 120 days after the date of the enactment of this Act, the Administrator shall submit to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives a report that describes the results of the evaluation required under subsection (a).

SEC. 7. AIRCRAFT RESCUE AND FIREFIGHTING STANDARDS.

(a) Rulemaking Proceeding- Not later than 180 days after the date of the enactment of this Act, the Administrator shall initiate a rulemaking proceeding for the purpose of issuing a proposed and final rule that revises the aircraft rescue and firefighting standards under part 139 of title 14, Code of Federal Regulations, to improve the protection of the traveling public, other persons, aircraft, buildings, and the environment from fires and hazardous materials incidents.

(b) Contents of Proposed and Final Rule- The proposed and final rule to be issued under subsection (a) shall address--

(1) the mission of aircraft rescue and firefighting personnel, including responsibilities for passenger egress in the context of other Administration requirements;

(2) the proper level of staffing;

(3) the timeliness of a response;

(4) the handling of hazardous materials incidents at airports;

(5) proper vehicle deployment; and

(6) the need for equipment modernization.

(c) Consistency With Voluntary Consensus Standards- The proposed and final rule issued under subsection (a) shall be, to the extent practical, consistent with national voluntary consensus standards for aircraft rescue and firefighting services at airports.

(d) Assessments of Potential Impacts- In the rulemaking proceeding initiated under subsection (a), the Administrator shall assess the potential impact of any revisions to the firefighting standards on airports and air transportation service.

(e) Inconsistency With Standards- If the proposed or final rule issued under subsection (a) is not consistent with national voluntary consensus standards for aircraft rescue and firefighting services at airports, the Administrator shall submit to the Office of Management and Budget an explanation of the reasons for such inconsistency in accordance with section 12(d) of the National Technology Transfer and Advancement Act of 1995 (15 U.S.C. 272 note; 110 Stat. 783).

(f) Final Rule- Not later than 24 months after the date of the enactment of this Act, the Administrator shall issue the final rule required by subsection (a).

SEC. 8. IMPROVED DATA COLLECTION ON RUNWAY OVERRUNS.

The Administrator of the Federal Aviation Administration shall--

(1) collect data, using either existing sources of aircraft operational incidents or a new reporting process, regarding aircraft excursions that do not result in fatalities, injuries, or significant property damage;

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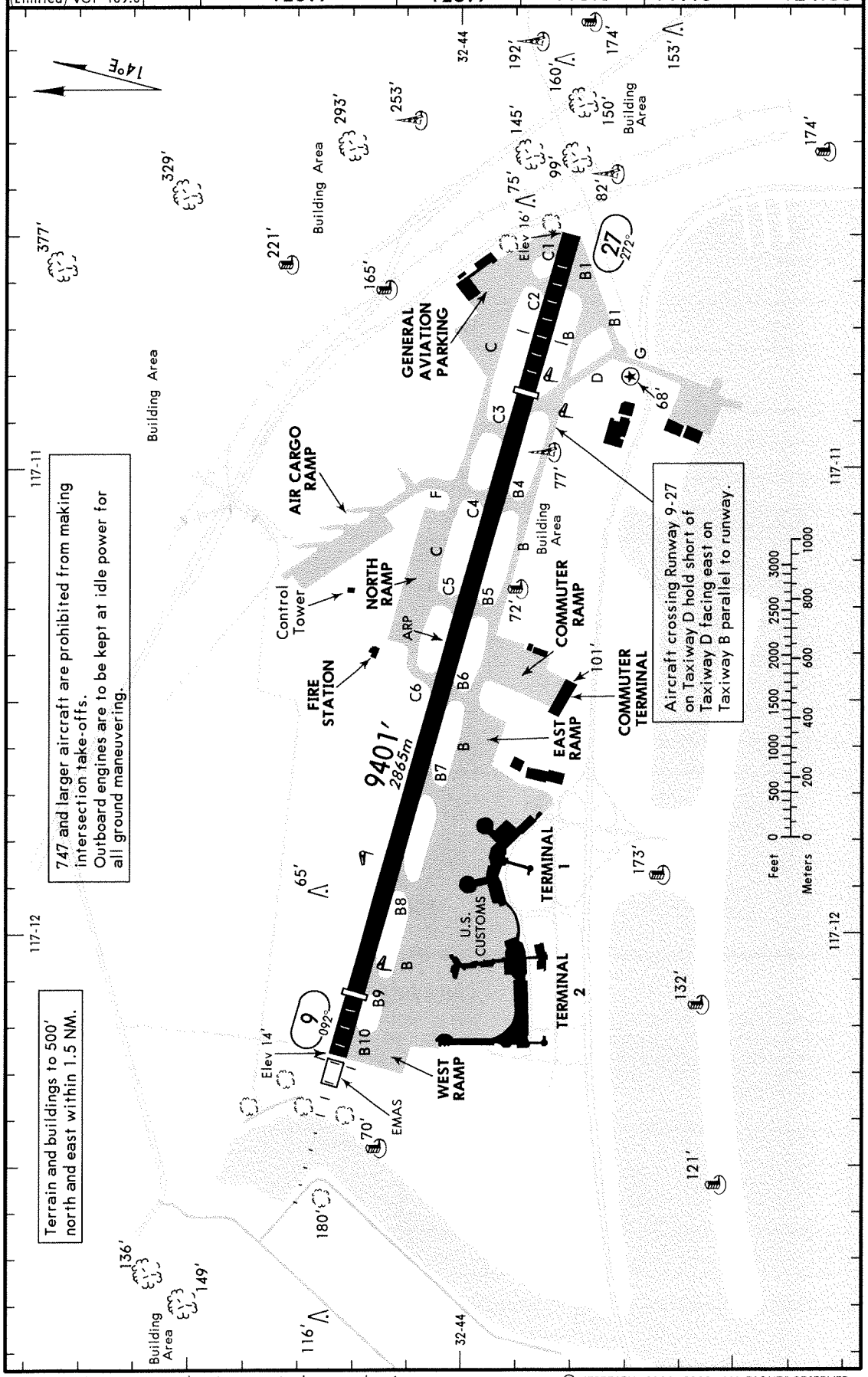
SAN DIEGO, CALIF
SAN DIEGO INTL

D-ATIS	ACARS:	LINDBERGH Clearance (Cpt)	Ground	Tower	SOCAL Departure (R)	
134.8 (Limited) VOT 109.0	PDC	125.9	123.9	118.3	West 119.6	East 124.35



CHANGES: Airport ramp and taxiways revised, runway bearing.

KSAN/SAN

SAN DIEGO, CALIF
SAN DIEGO INTL

GENERAL

ASDE-X surveillance system in use. Pilots should operate transponders with Mode C on all taxiways and runways.
Practice instrument approaches and touch and go landings prohibited.
Ultralight vehicles are prohibited.
Prior permission required for aircraft with wingspan in excess of 230'.
Intermittent presence of birds on and in vicinity of airport.
Outboard engines of 4 engine aircraft are to be kept at idle power for all ground maneuvering.

ADDITIONAL RUNWAY INFORMATION

RWY		USABLE LENGTHS LANDING Threshold	LANDING Glide Slope	TAKE-OFF	WIDTH
9	HIRL CL MALSR TDZ grooved RVR	8701' *2652m*	7204' *2196m*		200' *61m*
27	HIRL CL MALS TDZ ❶ PAPI-L grooved RVR	7591' *2314m*			

❶ Angle 3.5°.

TAKE-OFF & OBSTACLE DEPARTURE PROCEDURE

Rwy 27

With Mim climb of 317'/NM to 400'					
Both RVRs are required & controlling		Adequate Vis Ref	STD		Other
CL & HIRL	CL, or RCLM & HIRL		3 & 4 Eng	1 & 2 Eng	
TDZ RVR 5 Rollout RVR 5	TDZ RVR 10 Rollout RVR 10	RVR 16 or 1/4	RVR 24 or 1/2	RVR 50 or 1	300-1 1/2

Rwy 9

CAT A & B AIRCRAFT		CAT C & D AIRCRAFT
With Mim climb of 610'/NM to 600'	Other	With Mim climb of 610'/NM to 2300'
300-1	400-1	300-1

OBSTACLE DP

Rwy 9, Climb runway heading to 600', then climbing left turn direct MZB VOR.
Rwy 27, Climb runway heading to 900', then climbing right turn direct MZB VOR.
Aircraft departing MZB VOR R-180 clockwise R-360 climb on course.
All others climb in MZB VOR holding pattern (hold west, right turns, 075° inbound) to cross MZB VOR at or above 2000'.

FOR FILING AS ALTERNATE

	ILS Rwy 9 LOC Rwy 9 LOC Rwy 27 RNAV (GPS) Rwy 9	RNAV (GPS) Rwy 27
A B	900-2	NA
C	900-2 1/4	
D	900-2 1/2	

AMEND 6

CHANGES: None.

Many Caribbean, Latin America airports lack safety zones

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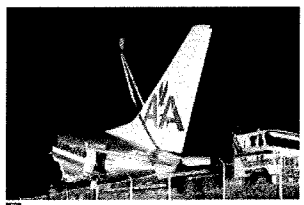
Enlarge By Lloyd Robinson, AP

A crane lifts the tale and fuselage of an American Airlines plane to a truck as it is moved to a hangar at the international airport in Kingston, Jamaica, Dec. 27, 2009

By Alan Levin, USA TODAY

Many of the busiest airports in the Caribbean and Latin America lack basic safety features that could have prevented the recent crash of an American Airlines jet in Jamaica, according to pilots, aviation safety experts and public documents.

No one died when the American Boeing 737-800 slid off a wet runway and slammed onto an adjacent rocky beach on Dec. 22, but dozens were hurt and the jet's fuselage was torn open in several places. It was the most serious accident involving a U.S. carrier since 50 people died in a commuter plane crash near Buffalo on Feb. 12.

As a result of a string of similar crashes in this country, Congress and U.S. regulators have required airports to install safety zones at the end of each runway by 2015 to minimize the chances of damage when a jet skids off the pavement.

However, despite years of pressure from the United Nations' International Civil Aviation Organization (ICAO), few airports south of the border have built safety zones. Each year, 23.6 million people travel from the U.S. to these destinations, according to the federal Bureau of Transportation Statistics.

"The problem has been there for a long time and it cuts into the margin of safety," said Bill Voss, president of the non-profit Flight Safety Foundation.

The Air Line Pilots Association, which represents more than 50,000 pilots, has long called for safety enhancements at these airports. "It's a huge concern that these (accidents) continue to occur, and we want to do what we can to mitigate that," said union safety chief Rory Kay.

Like many airports in island resorts, Kingston's Norman Manley International Airport was built in a harbor and is hemmed in by water. After leaving the runway, the American jet dropped off an embankment, sped across a roadway and plopped onto the adjacent rocky beach.

At least 29 commercial airports in the Caribbean and Latin America lack adequate safety zones at the end of runways, according to a Sept. 29, 2009, report by the ICAO. The organization, which has been pushing for safety upgrades for years, wrote that the list of deficient airports "is still very extensive."

Airports on the list include some of the Western Hemisphere's most-visited vacation destinations, such as Cancun in Mexico and St. Maarten in the Netherlands Antilles. They also include such South American capitals as Tegucigalpa, Honduras, and Guatemala City.

Manley airport's runways also do not have grooved pavement, according to Oscar Derby, director general of the Jamaica Civil Aviation Authority. The grooves allow rainwater to flow off more quickly, giving aircraft tires more traction when pilots apply the brakes. Virtually all large U.S. airports have grooved runways.

After the accident, American's pilots union, the Allied Pilots Association, posted a list of airports without grooved runways where the carrier lands. Out of 53 airports the union listed in the region, 45 lack grooved runways, according to the posting.

The Airports Council International branch representing Latin American and Caribbean airports did not respond to requests for comment.

As in most runway accidents, the actions of the American pilots will be closely scrutinized. The pilots touched down 4,000 feet from the start of the runway, well past the optimal landing zone, the Jamaican authority said.

Several serious accidents have occurred at airports in this region in recent years. On July 17, 2007, 187 passengers and crew aboard a Brazilian domestic flight died along with 12 people on the ground when it skidded off a runway at São Paulo-Congonhas Airport, slamming into a warehouse and bursting into flames. The airport has no safety zones, and its runway was not grooved.

Five people were killed on May 30, 2008, when a TACA Airlines jet skidded off a runway in Tegucigalpa. The jet struck cars on a road just off the airport.

Because many older urban U.S. airports, such as Chicago's Midway, are hemmed in by development, airports have turned to new technology to improve safety. Zodiac Aerospace ESCO makes a foam bed that can be placed

at the end of a runway that safely stops planes that skid too far. The firm has installed 50 of the foam devices around the world, but none in the Caribbean or Latin America, said Kent Thompson, vice president for airport sales.

Posted 1/12/2010 6:32 PM

To report corrections and clarifications, contact Reader Editor ***Brent Jones****. For publication consideration in the newspaper, send comments to letters@usatoday.com. Include name, phone number, city and state for verification.*

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dzourdz (0 friends, send message) wrote: 1/18/2010 3:52:37 AM

It's not just the airports in the Caribbean and Latin America. How about San Diego?

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getthefactspleas (0 friends, send message) wrote: 1/14/2010 12:11:04 PM

These are excellent questions which should be directed at AA. I concur with your statement regarding the radar vectors for the RNAV approach. I too await the outcome of this investigation. The press release indicated a landing reference speed of 148 knots and a ground speed on 163 knots. It would suggest that with this tailwind component, an approach to runway 30 would have resulted in a headwind component of 15 knots making the groundspeed 133 knots. If you disagree with my lay-person calculations please let me know.

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dudly (0 friends, send message) wrote: 1/14/2010 11:50:13 AM

getthefactspleas (0 friends, send message) wrote: 1h 2m ago
Perhaps the pilots should have requested radar vectors for the RNAV approach for runway 30. This would have allowed them to land in a 15 knot head wind with ample stopping distance at their landing reference speed.

All good stuff getthefactspleas. Are you a lawyer? Are you a pilot? I don't know the answer to these questions, as all airlines have different ops specs, but.... Was the RNAV approach for runway 30 a legal approach for this crew? Was there another approach the crew could legally fly that was below minimums? Was the weather above AA's circling approach minimums? When offered the circle to land, was it legal for the crew to do so? What was the actual tail wind "component" for the runway they landed on? Was the headwind "component" for runway 30 15 knots?

Obviously something went very wrong on this landing. As I said in an earlier post, I will wait until the accident investigation before publicly trying to hang someone without all the facts.

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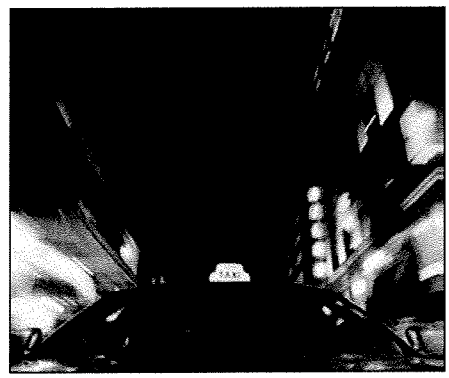
getthefactspleas (0 friends, send message) wrote: 1/14/2010 10:37:23 AM

Although many airports do not meet the requirements for runway end safety areas, I am pretty certain that airlines are required to do their own safety assessment of airports into which they fly and must obtain approval from their respective aviation authorities to add these airports to their operating specifications. The decision to fly into any airport is based as much on economics as it is on safety. The runway length of 8,910 feet in Kingston is more than adequate to accommodate the Boeing 737 at maximum landing weight. Perhaps the pilots should have requested radar vectors for the RNAV approach for runway 30. This would have allowed them to land in a 15 knot head wind with ample stopping distance at their landing reference speed. In any case, the pilots had the choice of executing a missed approach and going to their alternate airport in Grand Cayman. Was it a financial decision not to do so? Would it not have been less costly to have done so?

Grooved runways may help but they do not exist at all airports. I don't believe that the pilots were new to the Kingston airport and I suspect they would be well acquainted with weather of the type they experienced on the night of Dec 22. In any case, to have committed to a landing after floating half way down any runway is not only foolhardy but could be considered reckless endangerment of life and property. That is not the purpose for which we pay airlines hefty fares, and if these are the best pilots that AA has to offer to the flying public then perhaps it is that such statements are meant only to pander to the pilot union.



By Joan Lowy, Associated Press Writer

WASHINGTON — Six-year-old Joshua Woods was singing Christmas songs on Dec. 8, 2005, when a runaway plane at Chicago's Midway Airport crashed through a fence and collided with his family's car, killing the boy. The tragedy underscores what the government says is an urgent safety problem.

Eleven major airports, including Boston's, in are struggling to meet federal requirements that runways be surrounded by safety areas that give runaway planes extra room to stop, according to a new report from the Transportation Department's inspector general. The airports account for nearly one quarter of the nation's air passenger travel.

All the airports have been working for years to come up with solutions, but often there's no place to send runaway planes because the airports are hemmed in by highways, water, buildings or other obstructions.

The other airports are located in Baltimore, Charlotte, Fort Lauderdale, Los Angeles, New York, Philadelphia, Phoenix, San Francisco and Washington. Midway made safety improvements two years after Woods' death.

Between 1997 and 2007, 75 aircraft overran or veered off runways, resulting in nearly 200 injuries and 12 deaths, the report said. In just three of the accidents cited in the report, 80 injuries and Woods' death could have been prevented if safety improvements to runways made after the accidents had been in place beforehand, report said.

Safety areas typically are 1,000 feet long and 500 feet wide at each end of a runway, plus 250 feet along both sides of the runway.

The Federal Aviation Administration has allowed some airports that don't have enough room for full-size safety areas to install crunchable concrete beds called "engineered material arresting systems" at the ends of runways. The beds are designed to stop or slow planes, not unlike the way gravel-covered ramps on highways stop runaway trucks.

The beds are typically about 600 feet long instead of 1,000 feet, saving space. Beds at New York's John F. Kennedy International Airport have already halted three runaway planes. But even that requires more room than is feasible at some

airports.

At Logan International Airport in Boston, the safety area around one runway is inadequate, the report says. Constrained by Boston Harbor and urban development, the airport has installed a smaller than standard crunchable concrete pad designed to slow or halt runaway planes as an interim measure. Airport officials are studying extending the runway by filling in part of the harbor and then adding a full-size pad.

The report said some of the 11 airports may not be able to meet a congressional deadline of 2015 to put runway safety areas in place. Putting safety areas in place can require filling in wetlands, requiring environmental reviews that can take as long as 12 years to complete. Community opposition to airport expansion because of noise concerns has also been a factor.

"Until these challenges and problems are addressed, aircraft will remain vulnerable to damage and, what is more important, their passengers remain at risk of potential injury from flights that undershoot, overrun or veer off a runway lacking a standard (runway safety area)," the report said. "Improvements need to be made at the 11 large airports sooner rather than later."

The FAA has already spent $2 billion helping hundreds of airports put runway safety areas in place, said Laura Brown, a spokeswoman for the agency. In addition to the roughly $300 million budgeted annually for the program, the economic stimulus plan pushed by President Barack Obama contains millions of extra dollars, she said.

"We're working with all these airports to see if we can do all these things as quickly as possible," Brown said.

Chris Oswald, vice president for safety and technical operations at the Airports Council International-North America, which represents airports in the United States and Canada, said runway safety areas are one of the most difficult problems facing urban airports.

"You are talking about very significant geographic impediments to expanding runway safety areas," Oswald said.

Reagan National Airport outside Washington, for example, is sandwiched between the Potomac River and the George Washington Parkway. The airport has been reluctant to install a crunchable concrete bed because periodic flooding could damage the system, the report said.

Find this article at:
http://www.usatoday.com/travel/flights/2009-03-10-runway-safety_N.htm

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