

AERONAUTICAL CHARTING FORUM
Charting Group
Meeting 09-01 – April 29-30, 2008

RECOMMENDATION DOCUMENT

FAA Control # 09-01-215

Subject: Reporting & Depiction of Stopway

Background/Discussion:

In the course of researching declared distances, the ACF-CG's Declared Distance Working Group (DDWG) discovered numerous issues involving the reporting and depiction of stopways. The DDWG believes that these issues extend beyond isolated errors in charting an existing stopway.

A sampling of the issues uncovered by the DDWG includes the following:

1. The NACO Airport Diagram depicting a stopway on a runway without corresponding reporting of the stopway in the Airport/Facility Directory in accordance with AC 150/5300-13 *Airport Design*, paragraph 309 (see discussion below).
2. A Government airport data source reporting a stopway on a runway without a complementary report in the A/FD as required by AC 150/530-13, paragraph 309.
3. Use of terms which are not applicable to civilian aircraft/airport operations as defined in the Federal Aviation Regulations, Aeronautical Information Manual, or the AC 150/530-13 to describe paved areas beyond the end of the runway, i.e. use of the military term "overrun" vs. the FAR Part 1 defined term "stopway".
4. Stopway & declared distances reported for a runway in accordance with AC 150/5300-13, paragraph 309, however A/FD Airport Remarks section places restrictions or outright prohibitions on the use that stopway for those purposes stated in FAR 1's definition for a stopway.
5. Reporting declared distances for a runway, however, A/FD Airport Remarks section contains notes identifying a portion of that runway as "unusable" without the unusable portion being reflected in the declared distances.

Note: See accompanying presentation for details of each

A stopway is defined in 14 CFR Part 1:

Stopway means an area beyond the takeoff runway, no less wide than the runway and centered upon the extended centerline of the runway, able to support the airplane during an aborted takeoff, without causing structural damage to the airplane, and designated by the airport authorities for use in decelerating the airplane during an aborted takeoff.

Once designated by the airport operator, a stopway becomes a component of usable runway length which may be considered when planning the takeoff for certain airplanes depending on their certification basis. Most all modern jet transport category airplanes can take advantage of the designated stopway when calculating maximum allowable takeoff weight as limited by accelerate-stop distance requirements (ref: FAR 91.605, 121.189, and 135.379). It is therefore important that the designation of a stopway for a runway be properly documented in "source" and from this source, accurately reported and charted on flight documents intended for use by the pilot or operator.

AC 150/5300-13 *Airport Design* provides airport operators with the requirements for reporting a designated stopway to the end-user:

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.

It is assumed that the publication of a stopway and associated declared distances in the A/FD results from the recording of these items on FAA Form 5010-1, Airport Master Record*.

FAA Order 7910.4C, Airport Diagrams establishes criteria and guidelines for the construction and maintenance of airport diagrams published in the NACO Terminal Procedures Publication (TPP). While the Order does not provide specific instructions for the construction of the Airport Diagram, it does require that the proposal package for an airport diagram include the following information:

1. Include current Obstruction Chart, Airport Layout Plan or approved engineering plans and surveys showing the following data:
 - a. Runways, complete with magnetic headings (including the magnetic variation and epoch year, if available) and identifiers, runway end coordinates and elevations
2. Operational Data Requirements:
 - a. Runway dimensions – length and width, threshold to threshold.
 - b. Dimensions of overruns and blastpads.

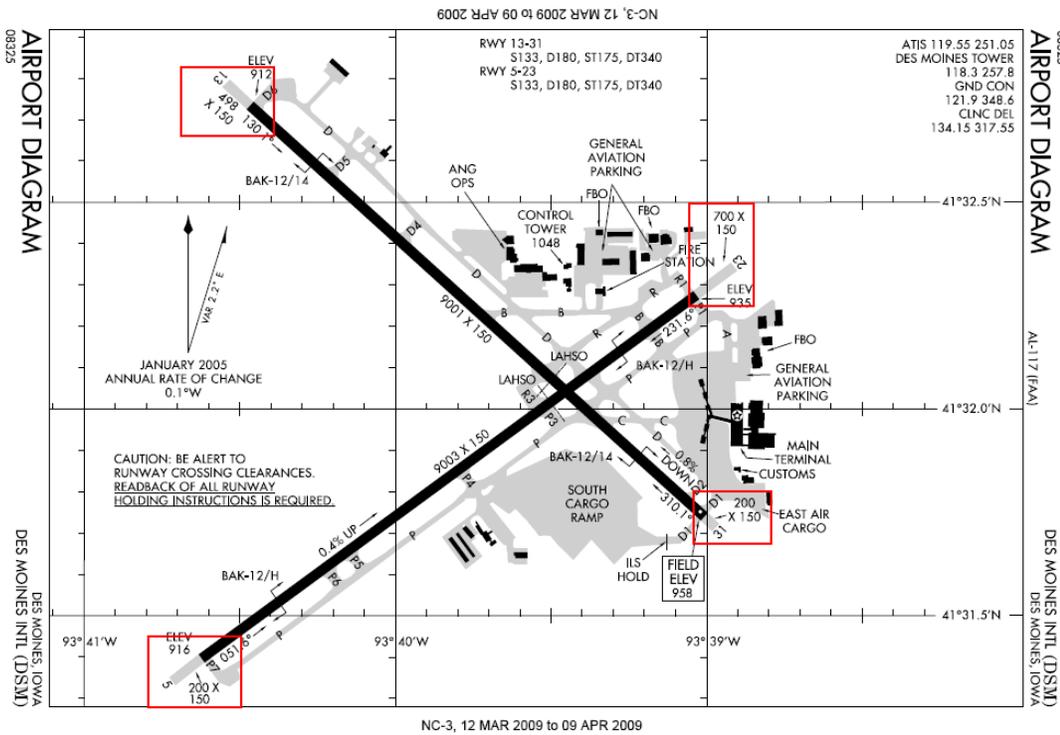
Attention is called to item 2(b)'s reference to "overruns". An overrun is a term applied strictly to military runways as defined in the AIM's Pilot/Controller Glossary:

RUNWAY OVERRUN- In military aviation exclusively, a stabilized or paved area beyond the end of a runway, of the same width as the runway plus shoulders, centered on the extended runway centerline.

Further, the term "overrun" is not used in AC 150/5300-13, Airport Design to describe any surface component of a runway. Therefore, the use of the term "overrun" in Order 7910.4C may be inconsistent with the stated purpose of this Order:

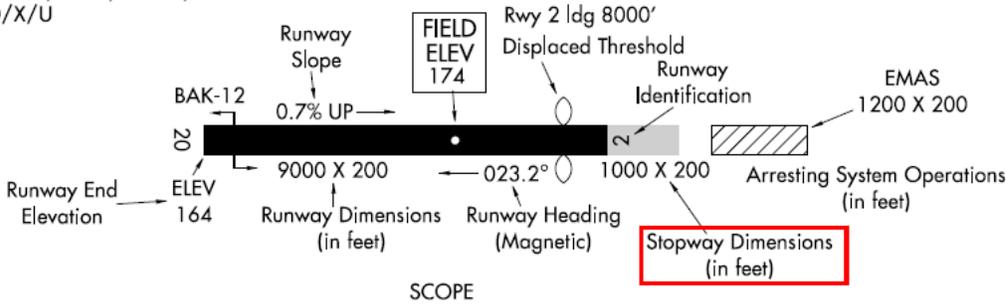
PURPOSE. This order establishes qualifying criteria and guidelines for the selection, development, construction, and maintenance of airport diagrams for public-use airports

To help appreciate the issues surrounding stopway reporting, the DDWG offers one example from Des Moines, IA airport (DSM). The NACO Airport Diagram for DSM depicts stopways on each runway end:



In reference to the TPP Airport Diagram Legend when a depicted area beyond the end of the runway contains dimensions, the area in question is identified as a stopway:

Runway Weight Bearing Capacity/or PCN Pavement Classification Number is shown as a codified expression.
 Refer to the appropriate Supplement/Directory for applicable codes e.g.,
 RWY 14-32 S75, T185, ST175, TT325
 PCN 80 F/D/X/U



Airport diagrams are specifically designed to assist in the movement of ground traffic at locations with complex runway/taxiway configurations and provide information for updating Computer Based Navigation Systems (I.E., INS, GPS) aboard aircraft. Airport diagrams are not intended to be used for approach and landing or departure operations. For revisions to Airport Diagrams: Consult FAA Order 7910.4.

Runways			
Hard Surface	Other Than Hard Surface	Stopways, Taxiways, Parking Areas, Water Runways	Displaced Threshold
Closed Runway	Closed Taxiway	Under Construction	Metal Surface

If the DSM A/FD entry is cross-checked against the above Airport Diagram, we find that the stopway length and associated declared distances for each runway have not been recorded as required by AC 150/5300-13 paragraph 309:

DES MOINES

DES MOINES INTL (DSM) 3 SW UTC-6(-5DT) N41°32.04' W93°39.79'
 958 B S4 FUEL 100LL, JET A OX 1, 2, 3, 4 LRA Class I, ARFF Index C

OMAHA
 H-5C, L-12J
 IAP, AD

RWY 05-23: H9003X150 (ASPH-CONC) S-133, D-180, ST-175, DT-340 HIRL
RWY 05: PAPI(P4L)—GA 3.0° TCH 56'. 0.4% up.
RWY 23: REIL. PAPI(P4L)—GA 3.0° TCH 56'. Pole.
RWY 13-31: H9001X150 (ASPH-GRVD) S-133, D-180, ST-175,
 DT-340 HIRL CL
RWY 13: MALSR. VASI(V4L)—GA 3.0° TCH 56'.
RWY 31: ALSF2. TDZL. PAPI(P4L)—GA 3.0° TCH 56'. Rgt tfc.
 0.8% down.

LAND AND HOLD SHORT OPERATIONS

LANDING	HOLD SHORT POINT	DIST AVBL
RWY 05	13-31	6350
RWY 13	05-23	5950

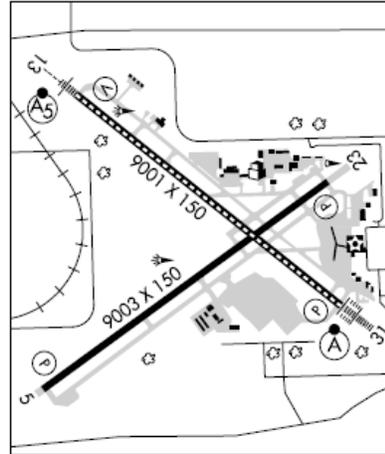
ARRESTING GEAR/SYSTEM

RWY 05 ←TYPE-H BAK-12B(B) (1353')
 TYPE-H BAK-12B(B) (1475') →**RWY 23**
RWY 13 ←BAK-14 BAK-12B(B) (1371')
 BAK-14 BAK-12B(B) (1320') →**RWY 31**

AIRPORT REMARKS: Attended continuously. PAEW adjacent all surfaces

Apr-Oct 1330-2230Z† Mon-Fri; mowing ops. Birds on and in/ovf arpt. Arpt director requires 24 hrs notice on transportation of explosives by civil acft. Use of Air National Guard ramp is official business/PPR call Defense Switch Network 946-8250, normal Air National Guard ops are Tue-Sat 1300-2330Z† except holidays. TWR has limited visibility on Twy D between Twy D-5, Twy D-6, Twy P-7 and AER 05. Terminal ramp taxilane between Twy C and Twy D restricted to B757 and smaller acft. FBO ramps weight restricted to 60,000 pounds. Rwy 05 touchdown rwy visual range avbl. Rwy 13 and Rwy 31 touchdown, midpoint and rollout rwy visual range avbl. Contract fuel not avbl, government contractors may accept government credit card. Informal noise abatement procedures in effect. Expect ATC to assign preferred rwy. Flight Notification Service (ADCUS) avbl, Mon-Fri 1430-2300Z†. For Sat, Sun Holidays and ngt customs svc, make appointments Mon-Fri 1430-2300Z†. At least 3 hr advance notice required.

WEATHER DATA SOURCES: ASOS (515) 287-1012. HIWAS 117.5 DSM. WSP.



It was also noted that the DSM FAA 5010-1 Record also does not report stopway lengths or report the associated declared distances or for the DSM runways. The 5010 Record reports that the DSM airport was last inspected on 5/23/08.

A review of the different source data available for the DSM airport raises concerns on validity of the stopway depictions shown on the DSM Airport Diagram. National Geological Survey (NGS) collects and reports aeronautical data in the National Airspace System. Reporting of airport and runway information is available from NGS in the Universal Data Delivery Format retrievable from the NGS web site. The UDDF Aeronautical Data for DSM (2004) is shown below.

RUNWAY PROFILE POINT DISTANCE FROM RUNWAY APPROACH END/

RUNWAY APPROACH END IS INDICATED BY 0 FEET.

NOTE: IF A PROFILE POINT DISTANCE IS GREATER THAN THE RUNWAY LENGTH, THE POINT IS ON A STOPWAY. STOPWAY LENGTH IS EQUAL TO THE GREATEST PROFILE DISTANCE SHOWN MINUS THE RUNWAY LENGTH

(Bold text is the value's description from UDDF legend):

```
DSM | 05950.A | ACE | 1.07 |
| DES MOINES INTERNATIONAL AIRPORT | 2112004 | | |
| DES MOINES | IOWA |
| NAD83 | 5 CM | NAVD88 | 25 CM |
| -2.2 | 2112004 |
| 957.6 | 31+39 | 2112004 |
| 1019.0 | 2112004 |
| 413202.3 | -933947.1 |
```

@
5 | P | 2112004 | (Runway Number & Julian Date Data Confirmed)

```
| Y | 2112004 | | | | |
| 413124.1227 | -934037.6028 | 534927 | 9003 (Runway Length) | 150 | 2112004 |
| 931.2 | 2112004 |
|
| 0 | 915.7 | 2112004 | RUNWAY PROFILE POINT DISTANCE FROM RUNWAY.
| 3106 | 931.6 | 2112004 | APPROACH END/RUNWAY APPROACH END IS INDICATED
| 5374 | 933.0 | 2112004 | BY 0 FEET
| 6613 | 937.4 | 2112004 |
| 7300 | 938.7 | 2112004 |
| 9003 | 934.6 | 2112004 |
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23 | P | 2112004

```
| Y | 2112004 | | | | |
| 413216.6130 | -933902.0436 | 2335031 | 9003 | 150 | 2112004 |
| 938.8 | 2112004 |
|
| 0 | 934.6 | 2112004 |
| 1703 | 938.7 | 2112004 |
| 2390 | 937.4 | 2112004 |
| 3629 | 933.0 | 2112004 |
| 5898 | 931.6 | 2112004 |
| 9003 | 915.7 | 2112004 |
```


13 | P | 2112004

```
| Y | 2112004 | | | | |
| 413244.1777 | -934028.0273 | 1322014 | 9001 | 150 | 2112004 |
| 920.7 | 2112004 |
|
| 0 | 911.6 | 2112004 |
| 1645 | 919.3 | 2112004 |
| 2841 | 920.7 | 2112004 |
| 3626 | 918.7 | 2112004 |
| 4079 | 919.3 | 2112004 |
| 6236 | 937.4 | 2112004 |
| 8167 | 954.4 | 2112004 |
| 8962 | 957.6 | 2112004 |
| 9001 | 957.6 | 2112004 |
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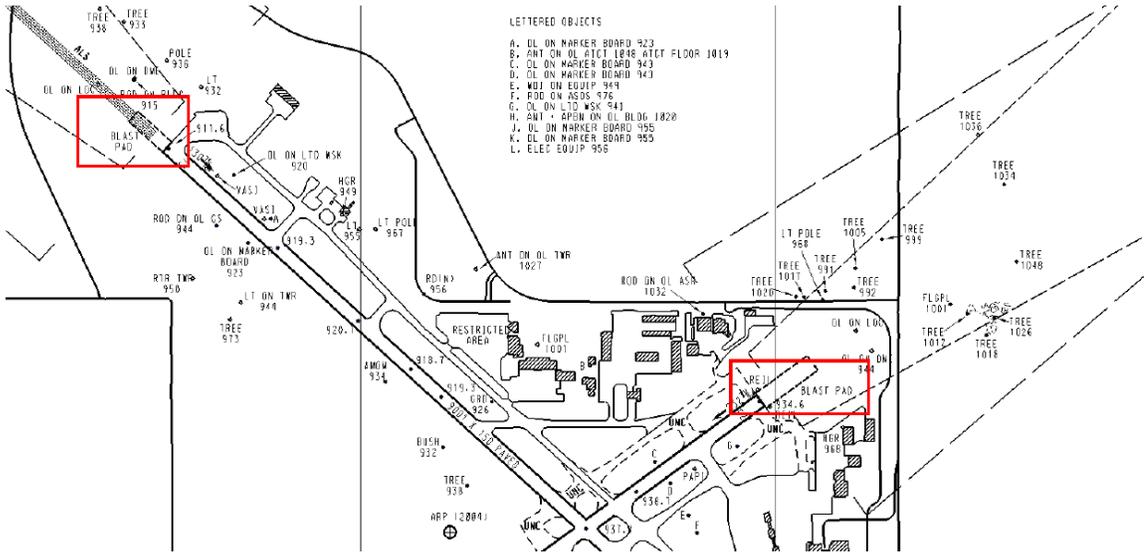

31 | P | 2112004

```
| Y | 2112004 | | | | |
| 413144.2784 | -933900.5529 | 3122112 | 9001 | 150 | 2112004 |
| 957.6 | 2112004 |
|
| 0 | 957.6 | 2112004 |
| 39 | 957.6 | 2112004 |
| 834 | 954.4 | 2112004 |
| 2765 | 937.4 | 2112004 |
| 4923 | 919.3 | 2112004 |
| 5375 | 918.7 | 2112004 |
| 6160 | 920.7 | 2112004 |
| 7357 | 919.3 | 2112004 |
| 9001 | 911.6 | 2112004 |
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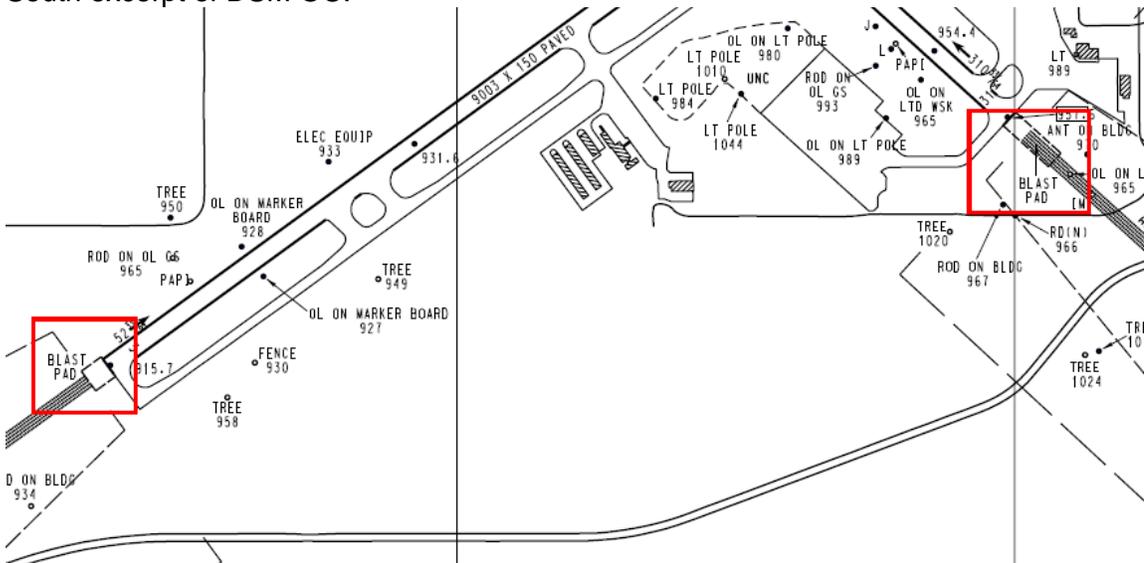
For each runway at a DSM, the runway profile points shown all correspond to the total runway length. Therefore, according to the UDDF Legend, since no runway profile point exceeds the runway length no stopways exists for the DSM runways.

The DSM Airport Obstruction Chart (Jan 2005) was also referenced to determined the validity of the stopway designation. Excerpts from the DSM's OC chart show the areas in question depicted as blast pads:

North excerpt of the DSM OC:



South excerpt of DSM OC:



The DSM OC's depiction of these areas as blast pads is supported by the information contained in the DSM's NGS Aeronautical Data UDDF file. The first line below the runway heading element records the known status of a blast pad for that runway. For DSM's runways, the blast pad status record is as follows:

```
| 5 | P | 2112004 |
| Y | 2112004 |
| 23 | P | 2112004 |
| Y | 2112004 |
| 13 | P | 2112004 |
| Y | 2112004 |
| 31 | P | 2112004 |
| Y | 2112004 |
```

UDDF blast pad status legend:

BLAST PAD

Y = BLAST PAD EXISTS

N = NO BLAST PAD EXISTS

X = NOT VERIFIED

The NGS Aeronautical Data UDDF file supports the DSM OC's designation of these areas as blast pads.

A summary of the DSM runway stopway/blast pad depiction between the different sources is shown below:

Source	Date	Stopway Depicted
NACO Airport Diagram	12 March 2009	Yes
Jeppesen 10-9/10-9A	12 Jan 2007 (current chart)	No
Airport/Facility Directory	12 March 2009	No
NGS UDDF Aero Data	30 July 2004	No
NGS Obstruction Chart	January 2005	No

The Des Moines, IA example is one of several airports where anomalies were noted between the available airport source data, A/FD presentation of runway information, and the charted runway/stopway depiction on the Airport Diagram. Similar examples may be seen at:

Springfield, IL (SPI)
 Bedford, MA (BED)
 Reno, NV (RNO)

Recommendations:

1. Ensure that operators of Part 139 certificated airports are following the requirements in AC 150/5300-13 concerning the designation of a stopway and providing associated declared distances for any runway with a stopway. The DDWG believes that AAS-300's recently released CertAlert 09-05 should aid in reminding Part 139 airport operators concerning this reporting requirement, however additional guidance/instruction to the regional Airport District Office's emphasizing this reporting requirement may be necessary.
2. During required inspections of Part 139 Airports, request that Airport Certification Safety Inspectors review the NACO Airport Diagram, the Airport/Facility Directory entry, and runway data furnished by the airport operator for accuracy and for conformity to the reporting requirements of AC 150-5300-13. Any irregularities or discrepancies should be brought to the attention of the airport operator and/or the appropriate Government agencies for resolution.
3. During airport inspections, review A/FD Airport Remarks for inappropriate instructions, limitations, or restrictions on the use of runway or stopway that are inconsistent with the other reported runway data, i.e. declared distances
4. When publication of a partial runway closure in the A/FD becomes necessary, revised and publish new declared distances for that runway
5. Explore options to ensure information and depiction of a stopway in NACO end-user publications are in agreement. Options may include cross-verifying stopway/declared distance data/depiction between the NACO Airport Diagram and the A/FD entry for the same airport. When runway data discrepancies are found, report them to appropriate agency for resolution.
6. Explore option of adding stopway data validation capability to FAA's Airports GIS web-based airport source data collection program. Such a data validation capability would require entry of corresponding declared distances on a runway where a stopway data has been entered.

Comments: This recommendation affects:

- Operators of Part 139 certificated airports.
- FAA Regional Airport District Office Inspection Staff.
- Airport Safety & Standards Office (AAS-300).
- NGS aeronautical field surveys.
- NACO Airport Diagram, Airport/Facility Directory
- Commercial Aeronautical Data and Charting Companies.
- Airport Source Data GIS program

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Date: April 14, 2009

MEETING 09-01: In the course of researching declared distances, the ACF's Declared Distance Committee discovered numerous issues involving the reporting and depiction of stopways. The Committee believes these issues represent a systemic problem and may not be isolated errors or inconsistencies.

Recommendations (in part) from the original Recommendation Document (See Attachment #9 Reporting and Depiction of Stopways)

- Ensure that Airport Operators of FAR Part 139 airports follow the requirements prescribed in AC 150/5300-13 concerning the designation of a stopway. The Committee also believes that AAS-300's recent CertAlert 09-05 should be a further guidance aid.
- During required inspections of Part 139 airports, request that Airport Certification Safety Inspectors review the NACO airport diagram, the A/FD and information provided by the Airport Authority for accuracy and consistency.
- Explore options to ensure information and depiction of a stopway in NACO and commercially provided airport charts are in agreement with regard to charting of stopways. Resolve differences accordingly.
- Explore the option of adding stopway data validation capability to the FAA's Airport GIS airport source data collection program.

The discussion focused on the collection, accuracy, completeness and timely dissemination of available airport source data (stopways), which, in turn, drives chart depictions (government and commercial).

Mr. Henry Felices, FAA/Airports Office, commented that there is confusion among pilots about mixed use of overruns and stopways, and the fact that they have different affects on declared distances. He asked the rhetorical question "What is necessary to stop using the term stopway?"

ACTION: Mr. Richard Boll will discuss the subject further within the Committee and report back at the next ACF.

MEETING 09-02: Mr. Richard Boll, NBAA, provided the following update concerning the Declared Distance Working Group (DDWG) efforts: They have assisted other efforts currently underway in the FAA to improve the collection and dissemination of declared distance information for FAA Part 139 airports (inclusion of all related data on Form 5010). Work is complete on guidance concerning declared distances for the AIM. Additions include definitions, use of declared distances in meeting runway safety design standards and operational guidance for pilots. The DDWG intends to offer a proposed revision to the AIM 4-3-10 concerning intersection takeoffs. Mr. Boll is currently coordinating with Mr. EC Hunnicutt, FAA/Airports Office, regarding other major AIM sections on declared distances. Revisions to the AIM section on airport markings and signage and to the Pilot/Controller Glossary remain to be completed. The DDWG has coordinated with and has gained commitment from the Airport Engineering Office (AAS-100) to harmonize proposed AIM definition changes to those also contained in FAA AC150-5300-13 Airport Design. The DDWG has provided technical assistance to the USAF on related subject matter. The goal in publishing updated AIM guidance is to provide and promote improved understanding and operational guidance.

The forum discussion touched on the difference between "clearways" and "stopways". Mr. Boll suggested that the word "stopway" be removed from the legend to resolve any ambiguity.

Mr. Boll reported that all Part 139 airports must provide the declared distances for each runway. Mr. Charles Adler, FAA/AAS-101 CTR, later provided how that data will be collected and stressed the high level of data integrity.

The following outstanding issues remain to be addressed:

- Collection of declared distance information for non-Part 139 airports
- Collection of stopway data on 5010
- Collection of clearway data
- Remove references to “overrun” on civilian airports (military term only)
- Address charted depiction of dimensions (FAA’s TPP legend implies stopway)

Issue 192 can be closed when the reporting of available distances is completed. Issue 09-01-215 will remain open until data collection issues are resolved.

MEETING 10-01: Mr. Richard Boll, NBAA, said still in work as part of the Declared Distance Working Group

ACTION: Mr. Richard Boll will report back at the next ACF.

MEETING 10-02: See Declared Distance Working Group report in paragraph V. C).

ACTION: Mr. Richard Boll will report back at the next ACF.

MEETING 11-01: See Declared Distance Working Group report in paragraph VI. C).

ACTION: Mr. Richard Boll will report back at the next ACF.

MEETING 11-02: See Declared Distance Working Group report in paragraph V. C).

ACTION: Mr. Richard Boll will report back at the next ACF.

MEETING 12-01: See Declared Distance Working Group report in paragraph V. B.

ACTION: Mr. Richard Boll will report back at the next ACF.

MEETING 12-02:

Mr. Rich Boll, NBAA, was not in attendance, but submitted the following statement:

The Declared Distance Work Group (DDWG) brought this agenda item before the ACF CG after discovering numerous discrepancies in the charting and depiction of stopways in US Government charts and those charts published by commercial providers.

Since the introduction of this agenda item, AeroNav/NACO has modified the legend of the Terminal Procedures Publication, removing the “stopway dimensions” from the pavement extensions beyond the end of the runway. This action eliminates one source of confusion regarding whether the extension is a stopway absent corresponding published declared distances information in the AFD. This action satisfies the agenda item’s recommendation #5.

A review of the November 15th NASR database edition has found that the irregularities concerning stopways & overruns at part 139 airports (those with scheduled air carrier service with more than 9 seats) have been largely addressed. Therefore, it appears that recommendations #1 and #2 have been satisfied as well.

However, this NASR database ([See attached to review document](#)) still contains numerous examples of questionable use of the terms “stopway” and “overrun” in association with runway data. In many cases, the area in question appears to be a “blast pad” instead of a stopway or overrun. In addition, smaller General Aviation airports, especially those with turf runways are identifying stopways and overruns. The DDWG questions whether the airport operators furnishing information to FAA clearly understand the use of these terms, and especially the term stopway, which is defined in [14 CFR part 1](#).

It appears that the use of “stopway” and “overrun” in the NASR database has resulted in the inappropriate charting of these areas on airport charts published by commercial charting providers. Since these providers rely on government source data, namely the NASR and NFDD, to produce these charts, there remains a need purge these databases of instances where stopway and overrun are inappropriately used.

The term “overrun” applies only to military airports and has no civil use. The term stopway is defined in [14 CFR part 1](#), and when designated by the airport operator, results in additional distance available for accelerate-stop distance performance calculations for some airplanes. Making this additional distance available for takeoff performance calculations may not be what the airport operator intends. Further, by listing the surface as a stopway, the airport operator assumes an obligation to maintain that area to the same standards as the runway. Some of the notes contained in the NASR regarding the stopway (e.g. stopway crumbling) suggest that this is not happening.

Therefore, the DDWG believes that recommendations #3 and #6 remain open:

3. During airport inspections, review AFD Airport Remarks for inappropriate instructions, limitations, or restrictions on the use of runway or stopway that are inconsistent with the other reported runway data, i.e. declared distances
6. Explore option of adding stopway data validation capability to FAA’s Airports GIS web-based airport source data collection program. Such a data validation capability would require entry of corresponding declared distances on a runway where a stopway data has been entered.

The DDWG finds that stopways and overruns remain identified in the NASR database on runways and that commercial chart providers are using this information for charting purposes. As result, these producers may unknowingly publish erroneous data on their products.

Therefore, the DDWG recommends at the next scheduled airport inspection, FAA take the necessary action to remove the use of the term “overrun” at civilian airports and that any

designated stopways meet the requirements of the Airport design AC and 14 CFR part 1 or remove the stopway designation from source (e.g. the NASR database).

Further, as stated in recommendation #6, the DDWG request that FAA institute data validation capabilities to the FAA's Airport GIS database to ensure that when a stopway is designated that all necessary information is furnished to generate declared distances for that runway and that the airport operator understands their obligation under 14 CFR part 1 to properly maintain that stopway for use takeoff performance calculations (i.e. accelerate-stop distance calculations) for applicable airplanes.

The DDWG recommends that this agenda item remain open until these recommendations are addressed.

STATUS: OPEN

ACTION: Rich Boll, NBAA, will report back at next ACF.