



AC 150/5300-18C

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Airports
Conference



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Agenda

- AC 150/5300-18C Status
 - Why it went from -18B to -18C and back to -18B
 - -18C will be back (maybe under another name)
- What are the benefits of -18C ?
 - AIXM compliant
 - Part 77, obstacles differences
 - Other differences between the two standards
 - Can a conversion process be created?
- AC 150/5300-19
- Questions/Discussion

Status of AC 150/5300-18C

150/5300-18C - Survey and Data Standards for Submission of Aeronautical Data Using Airports GIS (**Cancelled**)

Cancellation Notes

Letter

Date Cancelled

February 03, 2016

Date Issued

September 30, 2015

Responsible Office

AAS-100, Office of Airport Safety & Standards - Airport Engineering Division

Description

This AC provides the specifications and technical requirements for data collection conducted at airports in support of the FAA Airport Surveying - Geographic Information System (GIS) Program. The information furnished under these standards covers the entire spectrum of the FAA's airport data requirements, including runway and slope data, navigational aid data, obstruction data, and data on various airport features, including taxiways, aprons, and landmark features.

This version of the AC is a major rewrite, it now conforms to the new FAA enterprise data model and process of maintaining a single authoritative source of aeronautical data.

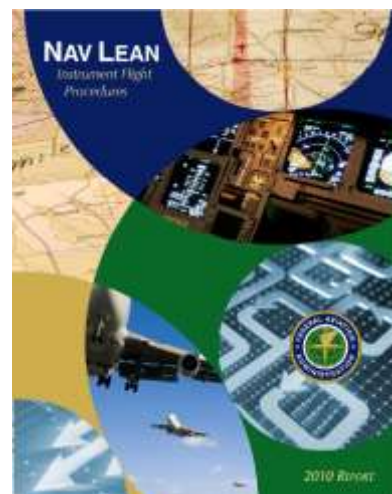
- 150/5300-18C PDF, 18.2 MB
- Letter Cancelling AC 150/5300-18C (with Further Notice) PDF, 131 kb

AC 150/5300-18C



Why it went from -18B to -18C

- The Navigation (NAV) Procedures Project Final Report (NAV Lean)
 - This report contained 21 recommendations for improving and streamlining the process of developing and implementing instrument flight procedures (IFP)



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The 21 recommendations

Table 1. Working Group Recommendations

Item	Rec Number	Recommendation	Cost	Time	OPR
1	1	Expedited processing for minor revisions of IFPs	\$	Short	AFS-400
	2	Approve TARGETS for electronic transfer	\$S	Medium	AFS-400
2	3	Direct to QA for STAES developed in TARGETS	\$S	Medium	AFS-400/AFW-3
	4	Establish abbreviated STAE submission process in FAA Orders	\$S	Medium	AFS-400/AFW-3/AFB-3
3	5	Establish standardized database with categorization and data retrieval	\$S\$	Medium	ATO/AVS/APP
	6	Provide access to, and mandate use of, a single set of data for all IFP providers	\$S\$	Medium	ATO/AVS
4	7	Allow electronic transfer of data	\$S\$	Medium	ATO/AVS
	8	Standardize software and data formats	\$S\$	Medium	ATO/AVS
4	9	Standardize data protocols, nomenclature, and rounding values	\$S\$	Medium	AVS
	10	Amend FAA Order 8100.12 to provide guidance on best practices approach to EA and use of order track data for course actions	\$	Short	AFB-34/AEE/AOC
8	11	Issue interim guidance for use of best practices approach to EA	\$	Short	AFB-34/AEE/AOC
	12	Tailor EA screening tools to be timely, efficient, comprehensive	\$	Short	AFB-34/AEE

The 21 recommendations

Item	Rec Number	Recommendation	Cost	Time	OPR
6	13	Standardize management and environmental specialist training	\$	Short	AFB-34/AE-37/AVS/AEE
	14	Modify FAA Order 8200.19 to define responsible federal officials for environmental work	\$	Short	AFB-34/AE-37/AVS/AEE
7	15	UNIFFP as focal point for system changes and new reports	\$	Short	AFS
8	16	Standardize SMS process for implementation of IFPs	\$S	Short	AJS
	17	Interim guidance for SRM compliance for IFP development and implementation	\$S	Short	AJS
8	18	Establish and implement a Web-based request and action portal for IFPs	\$S\$	Medium	ATO/AVS
	19	Amend FAA Order 8100.19 to define life cycle policy for IFP development	\$S\$	Medium	AVS
	20	Develop an outreach/communication plan to educate users on use of IFP portal	\$S\$	Medium	AFS/AJW/AJT/AJE
	21	Establish a Web-based Operations (Ops) Approval portal	\$S\$	Medium	AFS

Cost Symbols:
 \$ - Internal Level
 \$S - Service Director Level/VP
 \$S\$ - Line of Business (LOB)

Timeframes:
 Short - by 2012
 Medium - by 2018

Combining legacy data

- The data used for IFP currently comes from more than 17 sources
 - DOF, AirNav, NASR, DTED, AGIS, SRTM, OE/AAA, etc.
- These sources contain different formats, different accuracies, and are updated in different intervals
- These sources have duplicate data



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-18C will be back

- It might be called AC 150/5300-18D or something else
- The majority of these changes will remain due to the NAV Lean initiatives and recommendations
- 18 of the 21 NAV Lean recommendations were completed
- Back-end processing tools still needed work, held up by funding
- Without these tools -18C couldn't be properly initiated and supported through AGIS or IFP development



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Critical differences within -18C

- Principal reason for the change was to conform to the new FAA enterprise data model and process of maintaining a single authoritative source of aeronautical data.
 - AGIS will be the primary source for entry/update of airport data

Aeronautical Information Exchange

The Aeronautical Information Exchange Model (AIXM) is designed to enable the management and distribution of Aeronautical Information Services (AIS) data in digital format.

AIXM is the Joint FAA, EURO Control standard.

Critical differences within -18C

- **96% of attribute names have changed.**
- **46% of the attributes have an old 18b that is a one-to-one match.**
- **Table 2.1 added several new elements (ALP info).**
- Geospatial Features class went from 11 features to two.
- Airport signs have significant changes.
- New AGIS workflow for plans approval (no documentation)
- Table 2.1 now asks for plan submissions for ALPs only, the rest are online
- No list of critical or non-critical data attributes (constraints?)
- New Vegetation class added to collect ground cover

Critical differences within -18C

18B	18C - Feature	Attributes	Update 18C Enumerated Fields	18c Enumerated	Attribute 18B	Same as 18b
6.4	6.2 GROUP: AIRFIELD					
6.4.1	AIRFIELD 5.2.2	AIRCRAFTGATESTAND	Point			
	AIRFIELD 5.2.2	AIRCRAFTGATESTAND	EFFECTIVEENDDATE	Date		FALSE
	AIRFIELD 5.2.2	AIRCRAFTGATESTAND	EFFECTIVESTARTDATE	Date		FALSE
	AIRFIELD 5.2.2	AIRCRAFTGATESTAND	OPERATIONALSTATUSCODE	CodeStatus	5.14.75	status
	AIRFIELD 5.2.2	AIRCRAFTGATESTAND	USERNOTETEXT			description
	AIRFIELD 5.2.2	AIRCRAFTGATESTAND	AIRCRAFTGATESTANDNAME			name
	AIRFIELD 5.2.2	AIRCRAFTGATESTAND	AIRCRAFTTYPE			
	AIRFIELD 5.2.2	AIRCRAFTGATESTAND	AIRCRAFTGATESTANDTYPECODE	CodeGateStandType	5.14.29	gateStandType
	AIRFIELD 5.2.2	AIRCRAFTGATESTAND	AIRCRAFTMAXIMUMWINGSPAN			wingspan
	AIRFIELD 5.2.2	AIRCRAFTGATESTAND	AIRCRAFTGATESTANDLENGTH			length
	AIRFIELD 5.2.2	AIRCRAFTGATESTAND	AIRCRAFTGATESTANDWIDTH			width
	AIRFIELD 5.2.2	AIRCRAFTGATESTAND	AIRCRAFTCLASSIFICATIONNUMBER			pavementClassificationNumber
	AIRFIELD 5.2.2	AIRCRAFTGATESTAND	JETWAYAVAILABILITY			jetwayAvailability
	AIRFIELD 5.2.2	AIRCRAFTGATESTAND	TOWINGAVAILABILITY			towingAvailability
	AIRFIELD 5.2.2	AIRCRAFTGATESTAND	SURFACECOMPOSITIONTYPECODE	CodeSurfaceMaterial	5.14.78	
	AIRFIELD 5.2.2	AIRCRAFTGATESTAND	DOCKINGLIGHTSYSTEMAVAILABILITY			dockingAvailability
	AIRFIELD 5.2.2	AIRCRAFTGATESTAND	GROUNDPOWERAVAILABILITY			groundPowerAvailability
	AIRFIELD 5.2.2	AIRCRAFTGATESTAND	SURFACE TYPE CODE	CodeSurfaceType	5.14.79	surfaceType
	AIRFIELD 5.2.2	AIRCRAFTGATESTAND	SURFACECONDITIONCODE	CodeSurfaceCondition	5.14.77	surfaceCondition
						description
						useFlag
						status
6.4.2						name
						description

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Critical differences within -18C

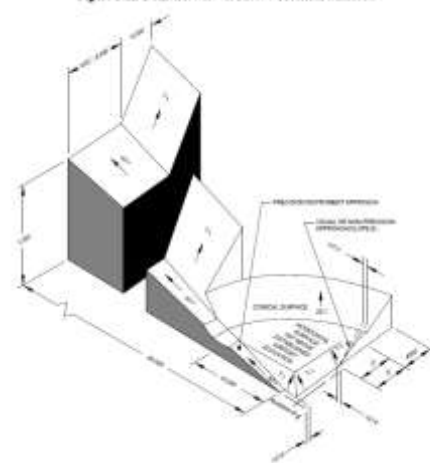
2.8.1 14 CFR Part 77 Analysis

- They have added part 77 surfaces, which are analyzed differently than 18 surfaces

4.3 Safety Critical

- Representative and penetrating objects within the defining surface areas (14 CFR part 77, airport design surfaces, TERPS surfaces or surfaces this AC defines)

Figure 2.12: Isometric View of Part 77 Precision Surfaces.



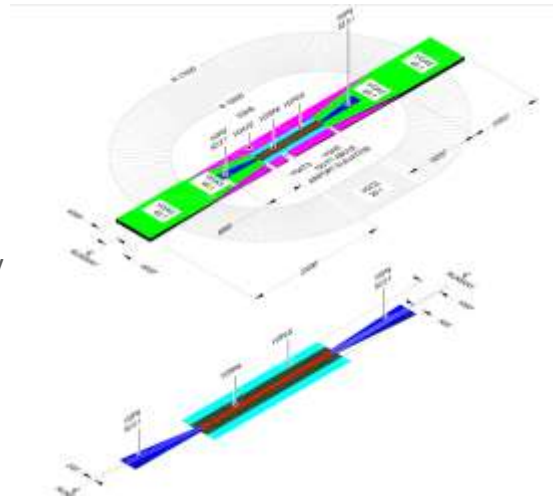
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Critical differences within -18C

2.8.3 Determining the Type of Analysis

- If the airport is updating its airport layout plan, the data provider must analyze and provide data for part 77 as well as the airport airspace analysis surfaces this AC defines.
- If the purpose of the data collection activity is to provide sourced data for the development of instrument approaches, then the data provider must analyze and provide the surfaces this AC defines.



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Critical differences within -18C

- Obstacle has become Object Line, Object Area and Object Point
 - This is the first time the FPO will be dealing with airspace issues that are not in a singular point format



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Critical differences within -18C

- Additional Common Features added in Section 5.1.1**

- The “OperationalStatusCode” is the old 18b “Status” Field.
- The “USERNOTETEXT” is a free form description field.
- The dates are going to be filled in by the system on submission.

Attribute Name Datatype	Description
EFFECTIVEENDDATE DATE	Provide the date the data ceases to be effective.
EFFECTIVESTARTDATE DATE	Provide the date the data becomes effective.
OPERATIONALSTATUSCODE VARCHAR2(20)	A code from CodeStatus describing the realtime temporal operational status of the feature.
USERNOTETEXT VARCHAR2(255)	An area for the user to add additional or clarifying information about the feature instance. Do not use this field to store data. The use of this field does not affect the features data integrity.

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Critical differences within -18C

- Table 2-1 Required features**

- The old table had 43 items listed, the new table has 78
- 29 of the changes are in regards to ALP’s
- No longer an Airport Obstruction Chart column

Required Task	Intended End User	AC Reference	Navigational Aid Symb					Airport Layout Plan ALP	Airside
			Category Symb	Ops	Precision	Precision	Visual		
Provide Obstacle Clearance Plan Control Plan		150/5300-18	*	*	*	*	*	*	
Provide Obstacle Clearance Plan		150/5300-18	*	*	*	*	*	*	
Provide a Safety Limit Work Plan		150/5300-18	*	*	*	*	*	*	
Provide a Safety Limit Plan		150/5300-18	*	*	*	*	*	*	
Classify or subclass Airport Obstacle Control		150/5300-18	*	*	*	*	*	*	
Provide, document and report the use of Obstacle Clearance Surfaces (OCS)		150/5300-18	*	*	*	*	*	*	
Classify runway end lights/totals		150/5300-18	*	*	*	*	*	*	
Document runway end lights/totals		150/5300-18	*	*	*	*	*	*	
Document runway end lights/totals		150/5300-18	*	*	*	*	*	*	
Identify and name any obstructions		150/5300-18	*	*	*	*	*	*	
Document obstructions		150/5300-18	*	*	*	*	*	*	
Document obstructions		150/5300-18	*	*	*	*	*	*	
Identify, classify, and provide all towers and towers within the obstructions of the ALP Chart 17 sections		150/5300-18	*	*	*	*	*	*	
Identify, classify and provide all air carrier gate locations		150/5300-18	*	*	*	*	*	*	
Identify, classify and provide all parking locations		150/5300-18	*	*	*	*	*	*	
Identify, classify and provide all major airport drainage ditches or storm sewers		150/5300-18	*	*	*	*	*	*	
Identify, classify and provide all vehicle parking areas associated with the airport		150/5300-18	*	*	*	*	*	*	
Identify, classify, and provide all special use areas (e.g. agricultural land, etc.) or unimproved lots		150/5300-18	*	*	*	*	*	*	
Identify, classify, and provide existing radio towers		150/5300-18	*	*	*	*	*	*	
Identify, classify, and provide all towers and general purpose towers and poles (e.g. height AGL) (include existing and future)		150/5300-18	*	*	*	*	*	*	
Identify, classify, and provide the Obstacle Limitation Zone		150/5300-18	*	*	*	*	*	*	
Identify, classify, and provide general aviation development areas		150/5300-18	*	*	*	*	*	*	
Identify, classify, and provide General Aviation		150/5300-18	*	*	*	*	*	*	
Identify, classify, and provide general aviation terminals and spot elevations		150/5300-18	*	*	*	*	*	*	
Identify, classify, and provide all other towers and poles		150/5300-18	*	*	*	*	*	*	

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Critical differences within -18C

- 5.8 Manmade Structures
 - Features have been combined

AC-18C

5.8	Group: MANMADE STRUCTURES.....
5.8.1	Construction Area.....
5.8.2	Roof.....
5.8.3	Structure Line.....
5.8.4	Structure Point.....
5.8.5	Structure Polygon.....

AC-18B

5.9.	GROUP: MAN MADE STRUCTURES
5.9.1.	Building
5.9.2.	Construction Area
5.9.3.	Roof
5.9.4.	Fence.....
5.9.5.	Gate.....
5.9.6.	Tower.....

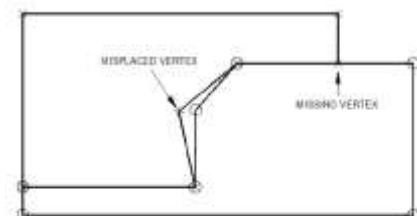
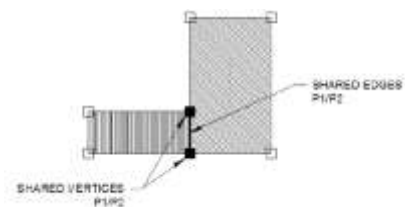
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Critical differences within -18C

- New geometry constraints
 - 29 new rules
 - Most standard across industry

- A runway intersection feature must be attached to all adjacent runway elements.
- A displaced threshold must correspond to a runway or runway element.
- A position feature defining the displaced threshold location must be contained within a runway or runway element feature.
- A marking feature defining a displaced threshold must cross a runway or runway element.
- A shoulder feature must correspond to a runway, runway element, taxiway element, stopway, or apron.
- A stopway feature must correspond to a specific runway direction.
- A taxiway element must correspond and be attached to another taxiway element, a runway, runway element, or apron.



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Critical differences within -18C

- New attribute constraints
 - 58 new rules
 - Should help with eALP module

- **Airport Movement Area** must have an operational status code.
- **Airport Parcel** must have how acquired type code, operational status code, parcel acquisition type code, parcel area type, and parcel area size.
- **Airport Sign** must have airport sign direction, airport sign height value, airport sign message front, airport sign type code, and operational status code.
- **Anchorage Area** must have anchorage area depth value, anchorage area name, anchorage area length, anchorage area restriction type (if any or none identified), anchorage area width value, and operational status code.
- **Apron** must have aircraft classification number, apron element type code, apron length, apron width, operational status code, pavement classification number, and tie down count.
- **Arresting Gear** must have airport type code, arresting gear distance, arresting gear distance reference, arresting gear type, directionality code, operational status code, and stopper code.
- **Bridge** must have bridge type code, operational status code, and directionality code.

Attribute Name	Description
AIRCRAFTCLASSIFICATIONNUMBER PARCELEAR2(12)	A value expressing the relative effect of an aircraft at a given configuration on a pavement structure for a specified standard subgrade strength.
APRONELEMENTTYPECODE PARCELEAR2(13)	A code from <u>CodeApron Type</u> identifying the primary use of the apron.
APRONLENGTH NUMBER	The overall length of the apron being represented.
APRONWIDTHVALUE NUMBER	The overall width of the apron being represented.
FUELTYPECODE PARCELEAR2(12)	A code or set of codes from <u>CodeFuel</u> identifying the different types of fuel available.
PAVEMENTCLASSIFICATIONNUMBER PARCELEAR2(12)	A value expressing the load carrying capacity of a pavement for unrestricted operations.
SURFACECOMPOSITIONTYPECODE PARCELEAR2(14)	A code from <u>CodeSurfaceMaterial</u> defining the type of material used in construction of the apron.
SURFACECONDITIONCODE PARCELEAR2(9)	A code from <u>CodeSurfaceCondition</u> describing the apron pavement serviceability.
SURFACTYPECODE PARCELEAR2(1)	A code from <u>CodeSurfaceType</u> describing the type of pavement surface.
TIEDOWNCOUNT NUMBER	The number of aircraft tiedowns located on the apron.

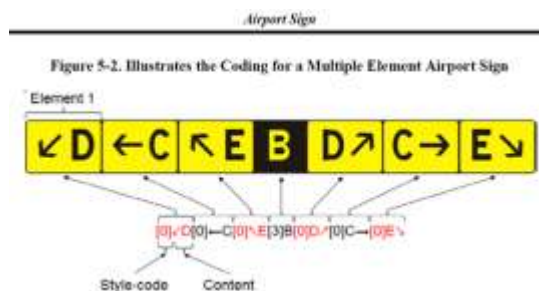
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Critical differences within -18C

• 5.2.5 Airport Sign-Attribution

- [1]BGR-VORTAC;114.8 (CH95)
153/333;DME 3.8 NM



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Critical differences within -18C

• 5.2.5 Airport Sign-Attribution

Unicode Value	Character	Description
U+2190	←	Left Arrow
U+2191	↑	Up Arrow
U+2192	→	Right Arrow
U+2193	↓	Down Arrow
U+2196	↖	Diagonal Up Left Arrow
U+2197	↗	Diagonal Up Right Arrow
U+2198	↘	Diagonal Down Right Arrow
U+2199	↙	Diagonal Down Left Arrow
U+0387	•	Center Dot
U+26AB	●	Filled yellow circle. Used for Arresting Gear location sign.

Style Name	Style Code	Description	Example
DIRECTION	0	A direction sign having black text on a yellow background.	
INFO_ACFI	1	A generic sign providing information to aircraft.	
INFO_VEH	2	A generic sign providing information to vehicle operators.	
LOCATION	3	A location sign with yellow text on a black background.	
MANDATORY	4	A mandatory sign with white text on a red background.	
NO_ENTRY	5	No-entry sign (graphic only).	
RWY_CRITICAL	6	A sign marking the location of the precision approach critical area (graphic only).	
RWY_DIST_REMAIN	7	A sign providing information regarding the remaining distance available on a runway.	
RWY_SAFETY	8	A sign marking the location of the runway safety area boundary (graphic only).	
TAXIWAY_END	9	A sign identifying the end of a taxiway (graphic only).	
TERMINAL	10	A sign identifying the location of a gate or parking stand.	
VEH_STOP	11	A sign indicating the location for vehicles to stop (graphic only).	
VEH_YIELD	12	A sign used to inform vehicle operators to yield to traffic.	

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Critical differences within -18C

• 5.7 Geospatial

- Airport Control Points have been combined into a Position Feature Class
- Some feature classes have been dropped

AC-18B

AC-18C

5.7	Group: GEOSPATIAL.....
5.7.1	Elevation Contour.....
5.7.2	Position:

5.8.	GROUP: GEOSPATIAL.....
5.8.1.	Airport Control Point – Runway Intersection.....
5.8.2.	Airport Control Point – Airport Elevation.....
5.8.3.	Airport Control Point – Centerline Perpendicular Points.....
5.8.4.	Airport Control Point – Displaced Threshold Point.....
5.8.5.	Airport Control Point – Stopway Ends.....
5.8.6.	Airport Control Point – Profile Points.....
5.8.7.	Airport Control Point – Touchdown Zone Elevation (TDZE).....
5.8.8.	Airport Control Point – Primary and Secondary Airport Control Stations (PACS/SACS).....
5.8.9.	Coordinate Grid Area.....
5.8.10.	Elevation Contour.....
5.8.11.	Issuance Area.....

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Critical differences within -18C

- There is finally a versioning history,
 - 3.10.3.2. Time Slice Model
 - Multiple versions can be submitted with the same feature
 - Only one feature can be active at a time
 - The end date of one feature must correspond with the start date of another feature
 - Airports will use this model extensively, especially in construction and project phasing.



Critical differences within -18C

- **If updates to the data are necessary, only the data requiring updating will require resubmission. Data previously submitted and accepted will already be within the system.**
- **How will the AGIS web portal combine the new data into the old?**
 - **Versioning will help but features till must be combined**
 - **Part of the development in the eALP module**

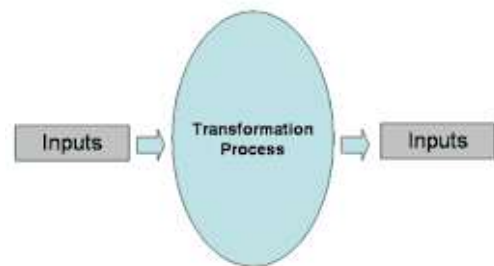
What to do if you have -18B data?

- For now, leave your AC-18B compliant data as-is
 - Hard to hit a moving target
- New projects should still utilize AC-18B, as AGIS cannot support-18C at this time
- If you contracted a project under 18C don't panic.



Creation of a conversion process

- The FAA understands the need for a conversion tool to go between AC-18C and AC-18B specifications
 - Such a tool would provide a significant cost savings in preventing those with data already -18B compliant having to manually convert the data.



Creation of a conversion process

- It won't be easy
 - 96% of attribute names have changed.
 - 46% of the attributes have an old 18b that is a one-to-one match.
- Not all feature classes are one-to-one
 - Manmade structures, Airspace, and Geospatial groups have encountered significant changes



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Creation of a conversion process

- The AGIS web portal already has back-end processes in place for such a conversion
 - It can convert between shapefiles, .dwg, and .dgn formats
 - It can transpose coordinate system values
- It is believed it can convert 90% of the data in an automated fashion and all safety critical required data.



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AC 150-5300-19

- Was released same date as 150/5300-18B
- Also corresponded with the NAV Lean initiative of an electronic data submission system



Advisory Circular

Subject: Airport Data and Information Program Date: 3/30/2015 AC No: 150/5300-19
 Initiated By: AAS-100 Change:

I. Purpose.

This Advisory Circular (AC) provides general guidance and information for airport owners and operators in the collection and management of data describing the physical infrastructure, characteristics, and services of their airport. This data is source material for the Federal Aviation Administration (FAA)'s aeronautical information databases.

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- Discusses what data airports are required to report to the FAA
- Establishes AGIS as the authoritative source for submittal of this information
 - Submittal can be made in a web form for standard airport information
 - Different standards based on IFR approaches serving your airport

Table 1-1. Determining IFR Service Criteria.

Type of IFR Service	IFR Service Availability		Criteria to Apply
	Currently	Planned (0 – 5 years)	
Vertically guided instrument approaches (ILS, LPV, RNP, TLS, PAR etc.)	✓	✓	AC 150/5300-18
Non-Precision, Non-vertically guided, instrument approaches (VOR, VOR/DME, GPS, NDB, TACAN, LOC etc.)	✓	✓	AC 150/5300-19
All other airports	✓	✓	AC 150/5300-19

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- This Advisory Circular should be looked at closely without Vertically Guided approaches

2.5.2 How Do You Collect the Data?

Depending on the IFR instrument approaches at the airport (see paragraph 1.1 and Table 1-1), the collection of safety critical data requires specialized tools and training. For airports with non-precision non-vertically guided instrument approaches, we allow the use of hand held GPS receivers meeting certain standards (see paragraph 2.5.3.2) and following defined processes outlined in this AC and in the online training. Data collection at airports with any type of vertically guided instrument approach requires professional engineering and surveying services to collect and format the data (See AC 150-5300-18 for the Standards and AC 150-5100-14, Architectural, Engineering, and Planning Consultant Services for Airport Grant Projects)

Table A-10. Public Airports with Federal Agreements: Runway.

Data Element to change or establish	BO or local ADO approval	FAA aeronautical study	Collect data to AC standards	Complete and sign web-based certification	Submit board or airport authority certified letter
The Runway Identifier(s) (Number) for your airport	✓			✓	
The Runway Length of any runway at your airport	✓	✓	✓		
The Runway Width of any runway at your airport	✓	✓	✓		
The Declared Distances information for your airport	✓	✓		✓	
The type of Runway Surface information for your airport	✓			✓	
The Pavement Classification Number for any runway at your airport	✓			✓	
The Weight Bearing Capacity information for any runway at your airport	✓			✓	
The information regarding the Markings (type or condition) at your airport	✓			✓	

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10 Typical Tables to be completed		No. of Items
1	General Information	16
2	Airport Administration and Logistical Data	9
3	Airport Operations	7
4	Airport services	5
5	Apron/Parking Services	4
6	Heliport/Helipads	4
7	Navigational Aids	2
8	Obstacles	2
9	Runway	25
10	Taxiways	4

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