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Perhaps the most difficult part of any flight is trying to find your way around the taxiways at a strange airport. When you are airborne, you have a whole panel full of gadgets to tell where you are. But once on the ground, especially at night – *you seem to be on your own for navigating*. If you are sitting in the cockpit of a 747, you have a chance of seeing the big picture, but if you are in a 172, all you can see is a sea of blue lights. Nice for the blue lights to show there are taxiways, but in a small airplane they all seem to be the same.

The Chart Clinic – Twenty Eighth in a Series

Help in solving this dilemma is provided by an airport diagram for each airport. Airport charts are gradually being located in front of the approach charts or are located on the reverse side of the first approach chart for each airport.

Heading and Border Data

The top of each airport diagram page provides standard information which includes the associated city and state name for the airport, plus the official airport name. The airport latitude and longitude coordinates are depicted below the airport name. The geographic coordinates are actually the coordinates of the airport reference point (ARP) which is depicted in the plan view by a circle which encloses a plus symbol. The letters "ARP" are shown next to this symbol. For example, at Colorado Springs, the ARP is located just to the left of Runway 30. If you navigate with an airborne database to the identifier KCOS, you will navigate direct to the grass in the middle of the airport.

Every country that is a member of the International Civil Aviation Organization (ICAO) has been assigned a one- or two-alpha identifier. For example, the single letter "K" has been assigned to the United States. The four-letter identifier for a United States airport is derived by

using the letter "K" before the FAA-designated three-letter identifier for that airport. On Jeppesen charts, each United States airport which has been assigned a three-letter identifier will have the letter "K" as the first letter of its identifier. Airports that have been assigned a letter/number combination will have just those three characters without the letter "K." At Colorado Springs, the ICAO airport identifier is KCOS. Another important use of the identifier is access to the database. On some airborne receivers, the four letters are required and on other systems, only the three letters are required to access the airport. When filing a flight plan to Colorado Springs, the letters "COS" should be used for domestic flights and the letters "KCOS" should be used for international flights to or from Colorado Springs.

On the new Briefing Strip™ format, the database identifier for the airport is at the upper left with the official airport elevation included below the identifier. In most countries, (including the US), this elevation is defined as the highest usable landing surface on the airport.

The index number for the airport diagram chart is the same as that used for the approach chart when it is on the reverse side of the first approach chart. Otherwise, the airports are gradually being assigned the index number 10-9 so they will be the first chart in front of the approach charts.

Communications

On the approach charts, the frequencies are listed in the order of use *arriving* at the airport. Conversely, on the airport charts, the frequencies are listed in the order of use when *departing* the airport. The first communication box at KCOS shows the ATIS of 125.0. In the first box, note that a VOR test (VOT) signal is available on the frequency of 110.4 MHz. When clearance delivery is available, it will follow the ATIS box. The remaining communication boxes include the ground control, tower, and departure control. At KCOS, the letter "R" in parentheses after Springs Departure indicates the availability of radar.

Special Notes

A box will be created in the plan view when special notes are provided at the airport. At Colorado Springs, the note box shows there is a low-level wind shear alert system and that there are some aircraft and time restrictions.

The note box on the approach chart includes other information, such as bird warnings, restrictions to air carrier traffic, restrictions to non-powered aircraft, and unusual airport locations. If you disregard some of these notes, the consequences can be serious. As an example, there is a note "Certain turbo jet aircraft permanently excluded after one violation of single event noise violation limit of 95 dB" at Santa Monica, California. It may cost you a bundle to get your business jet back home.

Since there are airline gates at KCOS, the parking spot coordinates are included in the plan view to help align the inertial navigation systems before departing the airport.

Airport Plan View

The airport diagram is drawn to scale, except for the *width* of some overruns, stopways, taxiways, perimeter roads, and approach lights. The scale used for the airport diagram can range from one inch per 1,000 feet up to one inch per 6,000 feet. A bar scale at the bottom of each airport diagram shows the scale in feet and meters.

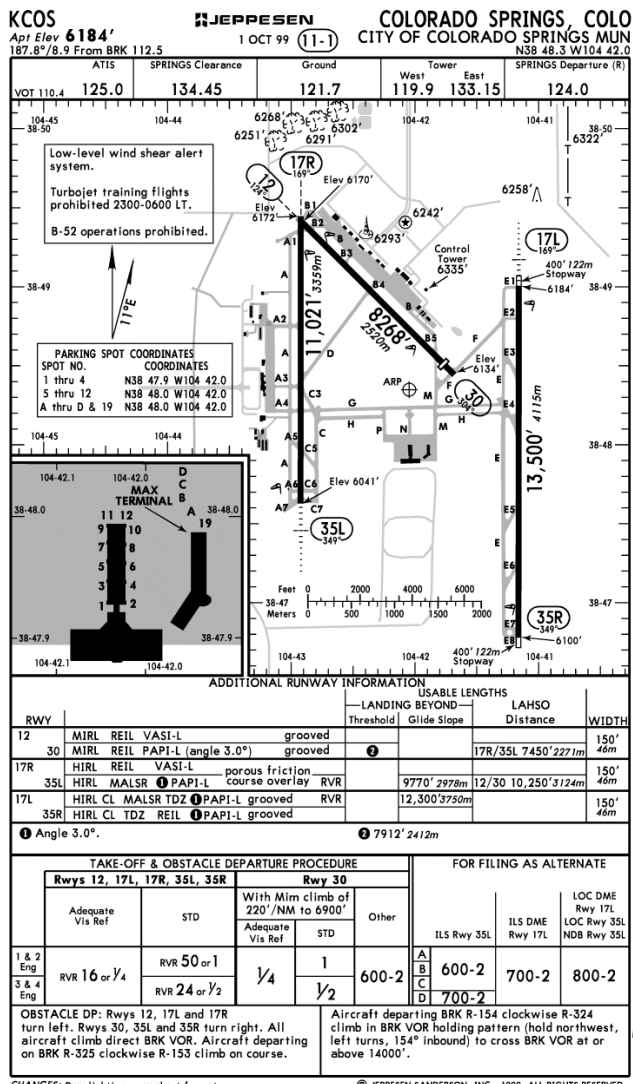
Latitude and longitude grid tick marks are placed around the perimeter of the airport plan view to help operators of latitude/longitude systems determine their exact coordinates on the airport to align the inertial navigation systems when not at a gate.

For each runway, the threshold elevation is shown. To determine the runway slope, the runway elevations at both ends can be used with the runway length that is shown adjacent to the runway symbol. Also, at each of the runway ends, the runway number is shown with the magnetic bearing down the centerline of the runway. This is a good way to check the heading indicator while on the initial takeoff roll.

Additional Runway Information

Some of the required airport information cannot be portrayed in enough detail by using only the airport diagram. This type of information is shown below the airport diagram in the box titled "Additional Runway Information." The second column in this box includes lighting details for each runway. Some of the most common lighting installations included in the lighting column are runway lights, approach lighting systems, touchdown zone lights, and VASI or PAPI installations. Runway visual ranges (RVRs), when installed, are also included with the runway light information.

The last four columns in the runway information box include runway length and width specifica-



CHANGES: Rwy lighting, new chart format.

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tions. As an example, Runway 30 at Colorado Springs has a displaced threshold. You have 7,912 feet of runway beyond the displaced threshold when landing. If you fly the ILS 35L glideslope with a centered glideslope needle all the way to touchdown on Runway 35L, you will have 10,250 feet of runway left after touchdown. This is noted in the additional runway information box labeled "Landing Beyond-Glide Slope." The third column of the usable runway lengths show the LAHSO (Land and Hold Short Operations) distances. The width of each runway is specified in the last column of the additional runway information box.

Other runway information, as such runway grooving or porous friction course overlay, is included in other runway information footnotes. The ILS Category II holding lines are depicted on the chart in their respective locations.

Some topographical features are included in the airport diagram plan view as a VFR aid when approaching a new terminal area. The vertical parallel lines between Runways 35L and 35R represent the highway to the airline passenger terminal. Roads are included with railroad tracks, rivers, and water bodies.

Take-Off & Obstacle Departure Procedure

Not everyone is required to have take-off minimums, but for those who need to comply with them, they are located at the bottom of the airport diagram when there is room. At some large airports, a separate page includes the Additional Runway Information with the take-off and alternate airport minimums.

The standard take-off minimums are 1 (statute) mile for one and two-engine aircraft and 1/2 mile visibility for aircraft with three or four engines. This is shown under the column titled "STD." Operators with FAA-approved "Ops Specs" are able to get the standard reduction down to 1/4 mile visibility which is shown under the column titled "Adequate Vis Ref." Adequate Vis Ref means that at least one of a number of visual aids are available (and seen). The visual aids are spelled out in the Ops Specs, plus they are listed in the legend pages. Because of obstacles at Colorado Springs off the end of Runway 30, there is a minimum climb gradient. If that can't be met, then the take-off minimums require a ceiling of 600 feet plus a visibility of two miles.

When using Colorado Springs as an alternate airport for a different primary destination, the forecast ceiling and visibility requirements change, depending on which approach you plan to use (and is forecast to be operating at your estimated time of arrival at KCOS as an alternate.)

Obstacle DPs

In 1998, the FAA changed the name of the IFR Departure Procedures to Obstacle Departure Procedures. They also changed the name of SIDs (Standard Instrument Departures) to Departure Procedures (DPs). This was done to more closely align the criteria and paths of SIDs and IFR Departure Procedures to the same specs.

In some locations, the IFR Departure Procedures are so complicated in text form that the FAA will be modifying them to graphic obstacle departure procedures and will give them a name similar to the name assigned to SIDs. At KCOS, the Obstacle DP is specified for every runway with a specific direction of turn after takeoff to avoid nearby Pikes Peak. After the turn, the path is

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direct to the VOR. Aircraft that depart the VOR on the 325 degree radial clockwise to the 153 radial, can climb on course from the VOR. Other aircraft (essentially those headed over Pikes Peak) need to climb in a holding pattern at the VOR until reaching 14,000 feet. When leaving the VOR west bound at 14,000 feet, that should be plenty of altitude to clear Pikes Peak.

This article concludes the airport diagram illustration discussion. In the next issue, we will look at standard instrument departures (SIDs) and standard terminal arrival routes (STARs).



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