Aviation Mentor

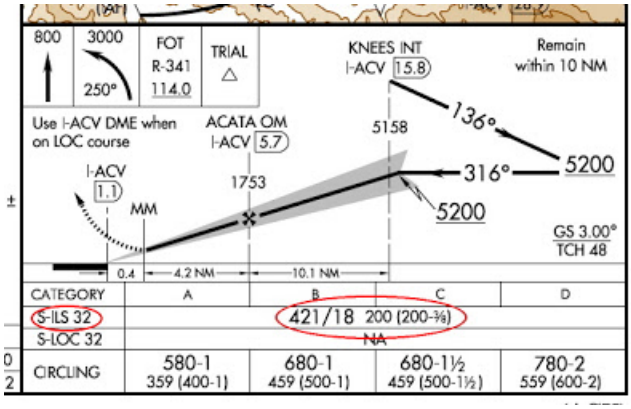
A gold seal flight instructor and former freight dog shares flying tips & techniques with an occasional bit of humor.

Thursday, June 07, 2007

Approach Lights *Good*

While there are aircraft that are equipped to fly an instrument approach (Cat II or Cat II) and land with virtually no visibility, most of us mere mortals need to be able to see a fair distance down the runway at the end of an instrument approach in order to land legally. Approach charts will list minima or minimums (sic) as a Minimum Descent Altitude or Decision Height and a minimum visibility. In the U.S., flight visibility controls whether or not you can continue and land. This seems counterintuitive until you consider ... the approach lighting system!

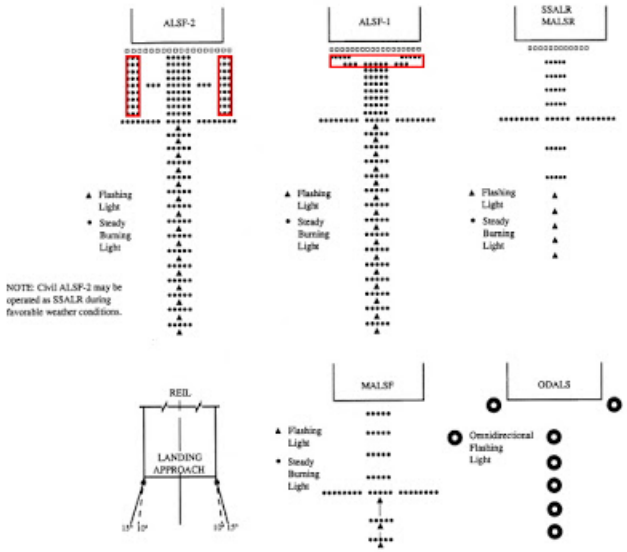
Here's an example of straight-in approach minima for an ILS. The Decision Height is 421 MSL (200 feet Above Ground Level) and the minimum visibility (which controls whether or not you may land legally) is 1800 feet (3/8 statute miles).



If you are still flying in the clouds at the DH prescribed for this instrument approach and you can make out the approach lights, 14 CFR 175(c) "Operating Below the DH or MDA" allows you to descend to 100 feet above the touchdown zone. That might just get down you to where the visibility is good enough to land. And the rules say you can descend even lower if "... the red terminating bars or the red side row bars are also distinctly visible and identifiable." The regulations don't describe red terminating or red side row bars and since the AIM doesn't provide a color illustration of approach lighting in Chapter 2, this is where some pilots get confused.

When giving an instrument proficiency check, I make a point of asking the pilot to describe the red side row bars or red terminating bars. A common answer is "Oh, those are the red lights at the departure end of the runway." Now think about it: Runways served by an instrument approach procedure that also have approach lighting are probably at least a mile long. If you can see the departure end of the runway as you approach the threshold, that's some pretty good visibility and it's unlikely that you'd even need the approach lights unless the cloud ceiling is very low.

Below is the illustration from the AIM that I've modified to outline the location of the red lights. The approach lighting systems that have red terminating bars are ALSF-1 installations. ALSF-2 installations are the ones with red side row bars. When you consider all the airports in the U.S., large and small, the ALSF-1 and ALSF-2 installations are not all that common. In fact, these systems are usually installed only at larger airports where the specialized, very low visibility approaches are also allowed.



Here is a link to a photograph of ALSF-2 approach lighting which shows the "red side bars" on either side of the sequenced, flashing lights in the center row (sometimes referred to as "the rabbit"). I wasn't able to find a photograph of an ALSF-1 installation.

On many occasions, seeing approach lighting systems much less elaborate than ALSF-1 and ASLF-2 have allowed me to descend below the DH and find the visibility I needed to land. Approach lights *good*!

Posted by John Ewing at 1:53 PM

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Labels: approach, FAA, instruction

10 comments:

Colin Summers said...

Why is it called a rabbit. Although I have been VERY happy to see it on occasion, I have never had it look like a rabbit to me.

5:03 PM

John said...

I guess because the sequence flashing lights lead toward the runway and perhaps resemble a rabbit running toward, and disappearing, into a hole.

The rabbit is good because it has a very distinctive appearance. Breaking out of the clouds at night on an approach, it's very unlikely that you'll mistake, say, a Home Depot sign, for the rabbit.

5:51 PM

Eric Gideon said...

I have a feeling it has something to do with dog racing - pilots are 'chasing the rabbit' to the threshold just like Greyhounds chase a mechanical hare around the track.

That aside, thanks for highlighting the terminating bars. I've incorporated your modified image into my lesson plan on the ILS! :)

11:24 PM

Hamish said...

Like Eric, I always thought it was to do with the mechanical rabbit used in dog racing — the phrase "chasing the rabbit" (which almost came out as "chasing the rabbi", but never mind :-)) was in common use when I were a lad to describe any race along a notional racecourse…

9:43 AM

javier juarez said...

just cause it looks like jumping ha
have a very nice day

1:44 PM

Ethan said...

Approach lights *are* good, but better approach lights are *better*! Of course, the FAA wants to eliminate as many *better* systems as possible, because it's cheaper to maintain a MALSR (a few hardware store variety medium intensity lights and 5 flashers) than an ALSF-I (airport-type high-intensity lights, and lots of them, with 15 - 21 flashers) but the difference is quite apparent when you're flying in bad weather. Here is a picture of an ALSF-I at Duluth International before it was replaced by an ALSF-II. They're doing well, because many airports with ALSF-I systems have been downgraded to MALSR instead. ALSF-I is the system originally designed for category 1 runways, which the FAA says a MALSR is good enough for these days. Incidentally, the US military rejected the MALSR as inadequate for CAT1.

10:02 PM

Anonymous said...

I believe what is meant is the word "rapid" as in rapidly sequenced flashing lights" not rabbit.

7:42 AM

Ethan said...

Hey, Anonymous... While the rabbit is indeed rapid, it's still called a rabbit by pilots, and not a rapid... read the comments about dog races for the most likely explanation.

2:54 AM

Dan Pendleton said...

Many times I heard on the radio pilots calling, "kill the rabbit" meaning we have them in sight and you can turn them off. Some of which are very bright in certain weather conditions.

7:42 PM

Rick said...

You said: "If you are still flying in the clouds at the DH prescribed for this instrument approach and you can make out the approach lights, 14 CFR 175(c) ...
****
The Reg reference is 14 CFR 91.175(c)(3). You provided a good clarification for what the red terminating bars and the red side row bars are. Thanks.

12:16 AM

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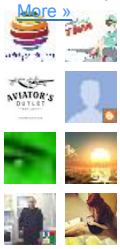

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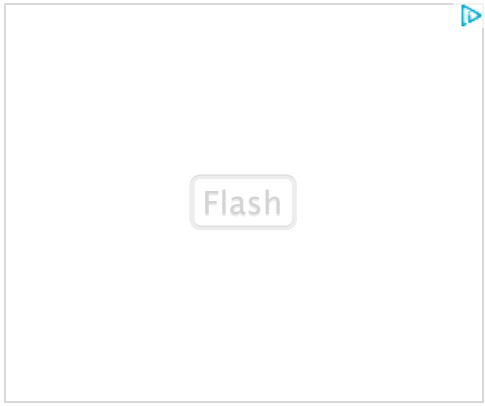

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