

8/14/2024

**FOR YOUR INFORMATION**

2024-153/10-18

2136860

To: Airport Manager, Harry Reid Int'l Airport (LAS), NV, FAA (ATM L30 TRACON)

Info: FAA (AFS-200, AVP-1, AVP-200, AWP-300, AJV-A, AWP-600, AFS-260, AJI-144),  
ATSG, AFA, ALPA, IFALPA, APA, APFA, ASAP, A4A, IATA, CAPA, ICAO, ICASS,  
IPA, NTSB, RAA, SWAPA

From: Becky L. Hooey, Director  
NASA Aviation Safety Reporting System

Re: LAS RKSTR3 Arrival Design

We recently received ASRS reports describing a safety concern that may involve your area of operational responsibility. We do not have sufficient details to assess either the factual accuracy or possible gravity of the report. It is our policy to relay the reported information to the appropriate authority for evaluation and any necessary follow-up. We feel you should be aware of the enclosed deidentified report.

To properly assess the usefulness of our alert message service, we would appreciate it if you would take the time to give us your feedback on the value of the information that we have provided. Please contact Dr. Becky Hooey at (408) 541-2854 or email at [becky.l.hooey@nasa.gov](mailto:becky.l.hooey@nasa.gov).



Aviation Safety Reporting System  
P.O. Box 189 | Moffett Field, CA | 94035-0189



**ACN 2136860****DATE / TIME**

Date of Occurrence	202406
Local Time Of Day	0601 to 1200

**PLACE**

Locale	L30.TRACON
State	NV

**AIRCRAFT / EQUIPMENT X**

ATC / Advisory - TRACON	L30
Make Model Name	Commercial Fixed Wing
Operating Under FAR Part	121

**PERSON 1**

Function - Flight Crew	Captain
Function - Flight Crew	Pilot Not Flying
ASRS Report Number	2136860

**PERSON 2**

Function - Flight Crew	First Officer
Function - Flight Crew	Pilot Flying
ASRS Report Number	2136681

**EVENTS**

Anomaly	ATC Issue - All Types
Anomaly	Deviation - Altitude - Crossing Restriction Not Met
Anomaly	Deviation - Altitude - Undershoot
Anomaly	Deviation / Discrepancy - Procedural - Clearance
Anomaly	Deviation / Discrepancy - Procedural - Published Material / Policy
Detector - Person	Flight Crew
Result - Flight Crew	Requested ATC Assistance / Clarification

**NARRATIVE 1**

On approach to LAS speed restriction of 250kts was given. LA Center cleared us from FL300 to FL280, with pilots' discretion to FL 240. Runway 08R was selected due to favorable winds. LA Center cleared us then to descend via the RKSTR 3 arrival, runway 19L. Requests for runway 08R were denied. F/O (First Officer) was busy monitoring the descent and airspeed with speed brakes extended due to being high on descend profile, while I was busy in reprogramming the MCDU (Multipurpose Control Display Unit) for new runway, verifying approach and arrival, company engine failure procedure, landing distance assessment, ATC comm etc. As the airplane turned north from RKSTR to GROLL, I noticed how the descent path on my PFD (Primary Flight Display) changed and the altitude color of waypoint GROLL on my ND (Navigation Display) changed from magenta to amber. After double-checking the arrival, ATC was notified prior to crossing GROLL that the crossing restriction would not be able to be made. I assume that we crossed GROLL 700-500 feet high. ATC requested CA (Captain) to contact TRACON after landing.

ATC kept us slow and high, and runway 08R was denied despite favorable winds for that runway. Runway change resulted in high workload. After switching runways in MCDU, aircraft automation initially indicated that all crossing restrictions would be made. Tailwinds encountered from RKSTR prevented the aircraft to

cross GROLL at or below 11,000 feet. With the initial setup of runway 08R, crossing restriction of LEEEW (waypoint after RKSTR) would have been met. I estimate that ATC expected us to descend approximately 13,000 feet in 20NM by giving us runway 19L which is not possible in this aircraft at 250kts. Max flap 1 speed would require a speed of 225kts. A heavy aircraft cannot descend over 2000ft/min at 250kts, even with speed brakes. ATC was contacted late, due to high workload and last-minute indications by aircraft automation. ATC also needs to be reminded that runway changes require additional tasks such as landing distance evaluations etc.

This arrival is not well designed and has confusing and unrealistic altitudes. On runway 19L/R transition waypoint JOVII has a crossing restriction of 10,000 feet while FELAA (next waypoint) shows a crossing altitude window between 11,000 and 8500 feet. If waypoint PEHTY is crossed at FL190 and the transition to 19L/R is flown, 8000 feet have to be lost in altitude in only 16.5NM at 250kts. ATC cannot expect unrealistic descend rates with speed restrictions of 250 kts.

## **NARRATIVE 2**

Before departure from ZZZ, LAS ATIS was reporting landing runway as 26L. I loaded an arrival and approach to that runway on the ground at ZZZ. Approximately 45 minutes from arrival at LAS, ATIS was reporting runway 8R and 19L with winds with a direction of 050 and approximately 5 knots. The arrival section of the company pages reports that runway 19 is favored if coming from the north. Due to our arrival from the southeast and the tailwind on 19L, I reloaded the arrival for 8R. I reviewed the arrival and briefed the approach. Center assigned us to 250 kts and a descent to FL280 then pilot's discretion to FL240 (right in the middle of our first altitude constraint at STYYX of 220-260). We leveled off at FL240 prior to STYYX. After hearing a aircraft runway assignment of 19L, the captain requested runway 8R. The controller told us unable and to descend via the SID for 19L and immediately gave us a frequency change to Approach Control in the same transmission. We were nearing PEHTY (approx. 15 miles) when given the descent from FL240. The captain checked us in after he confirmed the new bottom altitude of 6000 feet. After the altitude was set, I started my descent in managed mode with the speed brake at half. I checked the first altitude constraint at PEHTY (14000-FL190) and saw that we would make it and retracted the speed brake momentarily. We updated the PERF Approach page for new ATIS with winds 090/7 (Still a tailwind for 19L). Of note, we passed PEHTY at approximately 18000 ft. PEHTY is a common point to all runway versions of the RKSTR3 arrival. Here is a good time to mention that the next altitude constraint after PEHTY is above 14000 feet if going to 8R and below 11000 feet if going to 19L (just 16 miles from PEHTY). After beginning the descent and flying toward PEHTY, I loaded the new runway and executed the flight plan. The aircraft began trying to descend at a rate that increased the speed beyond the 250 kt assigned speed from center. I noticed we changed from on glidepath to 5000 feet above the new path. As the aircraft nosed over, I redeployed the speed brake to half (as far as I could go without getting below VLS and close to a-PROT). As we were nearing PEHTY, altitude restriction ensured, I was feeling the initial aviate part of flying was cared for at the moment, I immediately moved to navigate to ensure we got everything done. As we turned toward RKSTR we were accomplishing the tasks of checking the new points on the arrival, doing a landing assessment and then accomplishing the descent checklist. As we turned again toward GROLL, we picked up a tailwind, and finished the checklist and gave the prepare call to the FAs. I asked the captain to load the Single Engine Missed Approach procedure for the new runway in the secondary flight plan while I reviewed it. After the navigating and communicating was done, I went back to aviate and noticed a short distance from GROLL we were not going to make it below 11000 feet. I told the captain to tell approach and he did immediately. Approach responded with a phone number for possible pilot deviation. We passed GROLL at 11800 feet descending 2000 feet per minute. It is important to point out that getting the descent approx. 15 miles from PEHTY and crossing PEHTY at 18000 ft gave the aircraft 31 miles to descend from FL240 to below 11,000 feet and 16.5 miles to descend from FL180 to 11000 feet. At 250 knots assigned

and only half speed brakes available as well as a portion with a tailwind made this descent not likely at all. Due to some task saturation and an expectation that meeting the first altitude constraint would make the others possible, I did not recognize this until nearing GROLL. One small minor note. FELAA (three points beyond GROLL) has an altitude constraint of 11000-8500 feet. That is above the preceding two points altitude crossing restrictions and this may have lured me into a false sense of making all constraints. The remainder of the arrival and approach to landing went without incident. After the shutdown checklist the captain called the number provided, but I couldn't really hear much of the conversation aside from the question of why we wanted 8R and we should know LAS's traffic flows.

The first link in the chain was the late "expect runway 19L" assignment and clearance to descend for that new arrival runway assignment. At that point, it seems to me now, like it was too late to make GROLL below 11,000 feet. I think we were forgotten about here a bit until we asked for 8R, and instead of dealing with us we were handed off to approach. Approach control also didn't seem to notice our descent trajectory until we mentioned it to them nearing GROLL. That being said, our task saturation due to the rapid descent and our expectation that the first altitude restraint would keep us doing well before switching to other tasks were causal factors as well and delayed our noticing of the problem. We accomplished many mandatory tasks in a quick amount of time, but this also, resulted in our delay. Other factors include tailwinds leading to us favoring runway 8R over 19L and later restricting our descent to GROLL from RKSTR, airspeed limited to 250 kts well before STYYX, and altitude depiction at FELAA (11000-8500 feet) as opposed to the two previous points on RKSTR3 arrival (+/@10000 ft respectively). Finally, hi temps (37 degrees) and higher altitudes due to elevation at Vegas did not help us out either. I believe there are some suggestions for ATC in this, but it is not my place to talk to them as I have no expertise there. For us pilot types I can only say that instead of accomplishing all those tasks in what I think was a good order and manner and as a crew, I should have asked the captain to notify ATC that we were too rushed and maybe ask them for a timing vector to have more time to accomplish those essential tasks in order free up enough time to more fully evaluate the descent. It was just hard for us to recognize until we actually accomplished those steps. They were necessary.

I believe there are some suggestions for ATC in this, but it is not my place to talk to them as I have no expertise there. For us pilot types I think that instead of accomplishing all those tasks in what I think was a good order and manner and as a crew, I should have asked the captain to notify ATC that we were too rushed and maybe ask them for a timing vector to have more time to accomplish those essential tasks in order free up enough time to more fully evaluate the descent. It was just hard for us to recognize until we actually accomplished those steps. They were necessary. Also, if we had reviewed all routing on the STAR before the descent, instead of the one we were predicting, maybe we would have recognized at the runway swap the differences in descent paths between 8R and 19L.

## **SYNOPSIS**

Air carrier flight crew reported they were unable to comply with a crossing restriction on the RKSTR 3 arrival into LAS airport. Flight crew cited a late runway change from ATC and aircraft performance limitations as contributing.