

MU-2 magazine

JULY • 2016 • 11th edition

a publication of Turbine Aircraft Services, Inc.



what's inside:

SAFETY. COMFORT. ECONOMY.

My Marquise is the very best aircraft that I can offer my charter customers.

MAINTENANCE SPOTLIGHT

Frame Inspection

PROP 2016

An End and A Beginning

SINGLE ENGINE APPROACH AND GO-AROUND

OWNER / OPERATOR SPOTLIGHT

Safety First = Fleet Extraordinaire
Keller Companies, Inc.

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COVER PHOTO:

Rick Veley,
Owner

Photo by Jan Glenn during
PROP photo shoot.

The Mitsubishi MU-2, one of Japan's most successful aircraft, is a high-wing, twin engine turboprop with a pressurized cabin. Work on the MU-2 began in 1956. Designed as a light twin turboprop transport suitable for a variety of civil and military roles, the MU-2 first flew on September 14, 1963. More than 700 MU-2 aircraft were built before the aircraft went out of production in 1986. Presently, nearly 300 MU-2 aircraft remain in operation with the majority of the fleet registered in the U.S.

Turbine Aircraft Services, Inc. (TAS) is under contract to Mitsubishi Heavy Industries America, Inc. (MHIA) to assist with the support of the MU-2. TAS distributes MHIA-issued publications and serves as liaison between MHIA and MHIA's contracted Service Centers, Vendors and Training Agencies.



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Editorial

by Pat Cannon

This quarter I would like to dedicate this space to thank all of you for making PROP 2016 one of the very best safety events in general aviation. When we made the decision to have only three events this year, it was with a great deal of apprehension that we might miss the opportunity to bring as many of the owners and operators together as we had in 2014. With the shrinking fleet and the reduction of one location, it was unlikely that we could reach the 2014 numbers. We were pleasantly surprised to see that if we had done the fourth show again in Orlando, we would have broken that record. In addition, we did set a record for the number of fly in aircraft (70) that attended the three events. This is more aircraft than attended the four locations at PROP 2014.

I humbly thank you for the generous support that you have given TAS over the last 22 years of PROP programs. I cannot think of a better way to end the TAS involvement in this program than to have seen such a loyal and enthusiastic crowd during these last three events. As a user group, there is no other airframe manufacturer that I am aware of that promotes training and safety the way we do with the MU-2. Again, that is an acknowledgement to all of you for promoting aviation safety and for your participation in the programs that help Mitsubishi Heavy Industries America continue to foster and to fund the ongoing safety culture effort.

MHIA's intent is to continue PROP into the future. Meetings have been held between MHIA members and TAS members to discuss the concept of the ongoing PROP seminars. While no firm decisions have yet been made as to the location and format for PROP 2018, you should expect to hear more sometime this year.

This month we feature Richard Keller, President of the Keller Companies, and Bill White, Chief Pilot of the Keller Companies, telling how they have been so successful in their corporate use of the MU-2. As you may know, Bill is the highest time MU-2 pilot in the world and is flying the highest time MU-2 in existence. Earle Martin will give a preview of how he operates his aircraft in the charter arena. Earle is one of six FAR 135 operators using the MU-2. Carol Cannon will be giving the final report on attendance for PROP 2016 along with how it compares with earlier PROP programs, and Mark James will talk about the results of the many long body frame inspections that have been performed by IJSC. Lastly, but of great current interest, is Rick Wheldon's discussion of go-arounds and how a pilot's knowledge and ability to perform this procedure can improve their overall skill in the aircraft and prevent an unacceptable outcome to an engine failure on approach.

Have a great summer. 🍀



Pat Cannon is President of Turbine Aircraft Services. He is an FAA Designated Pilot Examiner, former MU-2 Demo Pilot, and Safety Expert.

Safety. Comfort. Economy.

by Earle Martin, SN 758
midcoast@gte.net

This article is to tell you why I know that my Marquise is the very best aircraft that I can offer my charter customers for the greatest variety of missions, as well as the best aircraft in which to earn a living for my family. I will point out how I attempt to showcase and maximize the advantages of the MU-2 compared to both King Airs and jets (unlike some of my competitor's turboprops, mine is deliberately equipped and appointed to compete with the best of jets).

Most of us know the value and efficiency the MU-2 offers. I will simply add that at my current pricing, my Marquise brings in \$1875/hour on a bad day, and that a well-operated Houston King Air 200 runs at least 35% more when it comes to a turnkey quote. A couple of good operators have gone to King Air 350s, which increases my pricing advantage. See below where I discuss operating economics.

I believe the MU-2 is among the most capable aircraft that can be flown single-pilot, which suits my customers about 95% of the time. Some passengers or their employers will pay extra for a second pilot in case of an emergency. Some Houston turboprop operators provide a mandatory second pilot at such additional cost. See below where I discuss my long-term plans.

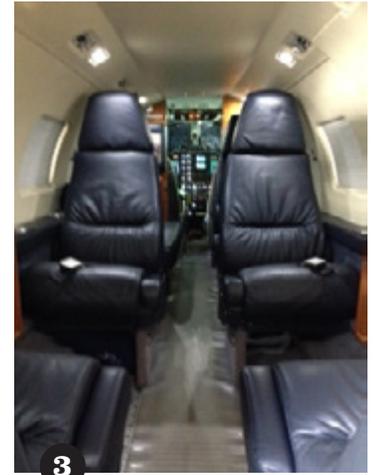
I believe the proliferation of new jets during the period prior to the 2008 crisis made many charter customers sensitive to the age of an aircraft simply because they could be. I don't know if I could be as confident selling charter in any other 1980 aircraft as I am with my Marquise. My ability to do so is based on the MU-2's then and now forward-looking design and performance, the availability of the latest and greatest modifications, the availability of Mitsubishi-backed support, and my willingness to invest the money in all of the above to keep my promise to my passengers. If they want what the MU-2 offers, there is no newer one than mine.

With most of the MU-2s being owner-flown, it is usually the passengers who are lucky to be on board the aircraft. I am acutely aware that in my case it is I who am lucky that passengers will pay to ride in my aircraft, and I have to make sure that what they see and experience will prompt them to repeat. Since my passengers can sit in any seat including the copilot's seat and the lavatory seat, I will go from front-to-rear describing what I offer.

In the Houston charter business, I rate my cockpit as an 11 (Figure 1). I have dual G600s with software version 7.0 and the full XM subscription, dual GNS430s, Primus 400SL, Skywatch, WX-500 and have purchased the MU-2 AOA system for installation at the next inspection. This provides the most complete weather information available (XM lightning and icing



Mid-Coast Air Charter, Inc. was founded in Houston by Jack Chapman in 1979. Mid-Coast has always specialized in the MU-2, operating long bodies in both passenger and cargo configurations and later an executive F Model. After becoming a Mid-Coast pilot in 1989 and buying the company in 1996, Earle Martin simplified the operation, becoming a single-pilot operator of a single Marquise. His customers include executives, hunters and fishermen, sports fans, oil well control specialists, airline mechanics, and other charter operators' overflow customers.

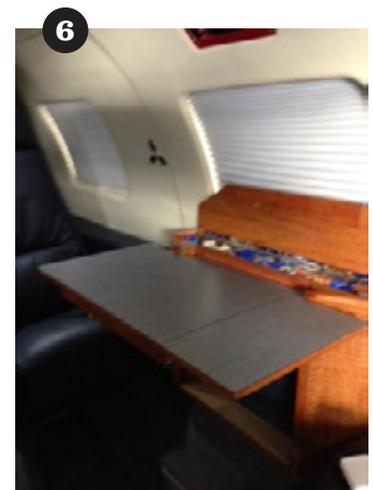


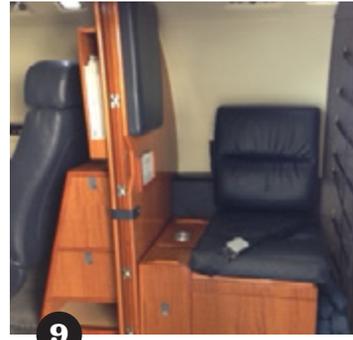
information is key), synthetic vision, WAAS approach, and GPS steering. Most Houston aircraft from the late 1990s through the 2000s with their integrated systems don't offer all or any of these due to lack of availability or high cost.

I rate my six-year-old Ranger Aviation interior (they did an excellent paint job as well) as a 10. In addition to their using best-quality materials and seat design, I apply leather conditioner after every inspection and unfailingly close my Lou Martin window shades when no passengers are on board. I chose tight loop-pile carpeting that wears well and does not trap dirt. My two-place divan (Figure 2) allows me to seat nine passengers in addition to myself (which happens to be the maximum allowed under standard FAR 135). Such divans were no longer certified for two passengers on King Airs after about 1987 or so. As the brochures pointed out back in the day, the long body MU-2 passenger cabin is 14 inches longer than that of the King Air 200 and is noticeably wider. This allows more legroom (apparent in the club section) (Figure 3), flexibility in choice of legroom versus recline angle,

and comfort for outboard arms. My baggage area is correspondingly smaller than that of the King Air; I tell my passengers that with a full load of nine, each can bring what each could carry on to an airliner plus a soft gun case or a few slim golf bags.

My two principles in customizing the passenger cabin were to eliminate clutter and to make everything possible accessible to the club seating area where four or fewer passengers will sit. Custom cabinetry from Sherline Co. in Houston enables this and sets my interior apart. I located my bar behind the copilot's seat and moved the Mapco mid-cabin accessible from the right rear-facing club seat. I have a large insulated iced drink drawer below the liquor cabinet and the clean ice below that (Figure 4). The club writing tables (Figure 5) have the earlier MU-2 model lid in place of the tambour door, the table leaves extending toward the seats instead of the aisle, and beveled ends that conform to as opposed to digging into thighs and allow more flexibility in placement of the club seats (Figure 6). Each passenger has a module containing two cupholders, a 14v power outlet and an MP3 jack for the XM with Bose





QC3 headsets provided. In addition to preparing such modules, Intercontinental Jet also braced the finger bulkhead forward of the entry door so elderly passengers can grab with safety (Figure 7). Magazine, newspaper, and trash storage along with a second smaller insulated iced drink drawer and a space for the fruit and cheese tray I prepare for every flight are all built in and accessible to the rear club passengers (Figure 8). The lavatory is serviced after any use, has the latest style pump, and a Mark James custom Imron seat (if you become a new IJSC inspection customer I'm sure you can work something out with Mark) (Figure 9). If a passenger chooses me over a jet for a long trip I want them to relieve themselves as they desire with the best lavatory view in the business. Finally, my baggage net has extra slack in the straps to allow more luggage to be placed behind the net (Figure 10), and my entire baggage area is carpeted to prevent overhead wear or discoloration when jamming luggage in. All interior light bulbs have been replaced with LEDs. I carry an AED along with smoke hoods for each seat.

The MT propellers have not only reduced noise and vibration but also emphasize that the newest regional turboprops look more like my aircraft than they do King Airs.

Now for the controversial part (this article is not written or endorsed by MHIA or TAS) in terms of my operation; I operate on VFR flight plans with flight following about 95% of the time. I will tell you how and why I do so. You may take or leave anything in this piece. Don't do anything you can't feel safe or comfortable doing. Frankly, I started considering and doing this during the PATCO strike when short-staffed ATC was asking pilots to request flight following in lieu of IFR handling when possible, before I became an MU-2 pilot.

I believe the MU-2 stands apart in its efficiency below the flight levels and in its ability to cruise for a respectable distance at any altitude between 3000 and 28000 MSL. I brought this up at the French Lick Fly In in 2001 and when I emceed the Dallas PROP in 2004. At those times, some were forecasting a flock of VLJs in the flight levels and RVSM had not been mentioned that I knew of. Even with more space and fewer planes in the flight levels, I still believe that I am pressing the MU-2's advantage to operate as I do. Key to this is having all of the information concerning navigation, traffic and weather that I have on board along with the increasing coverage of ATC radar at lower altitudes.

Safety is first and comfort is second, period. But from my economic standpoint, block speed is most important if safety and comfort are assured. In Houston, we provide turnkey quotes. The faster I am up and down the higher my hourly rate with a reasonable price to my customer (see my pricing versus King Airs above). I can fly more trips between hourly maintenance events. If I am burning fuel at a higher rate at a lower altitude, the lesser flight time can mean the same or a slightly higher total consumption. If you have an air data computer feeding fuel flow to your GPS, you can easily see how this tradeoff will work in real time.

Operating in and out of busy terminal areas, I arrive low (below the departing aircraft) and fast, keeping speed up until about seven nm from the airport. I have had more success than not with ATC putting me near the front of the line after I have flown into a terminal area a few times. They have more flexibility if they choose to use it, and it helps if I know how to use my Skywatch and eyeballs to spot traffic and offer to maintain visual separation. As long as my departure airport is VMC and my destination airport has an alternate airport or two nearby, ground stops don't affect my operation. Often a

ground stop means there is less traffic en route and at the destination.

I appreciate the flexibility VFR (always with flight following for me) provides even in certain weather situations. I find that, even properly accounting for the delay in transmission, the depiction of XM lightning truly marks bad weather. I'm not sure ATC sees this when they are routing traffic. They might advise against an area where they show moderate Nexrad precip, and I have seen them route traffic through areas where I see XM lightning. I want ATC's advice but I am more comfortable than before making my own decisions.

Intercontinental Jet has been an indispensable partner in Mid-Coast's charter operation since it was founded (I think Mid-Coast existed first). I have operated with the absolute least maintenance downtime whether from routine inspections or major repair events and with the absolute most reliability and performance. Mark James and Neil James have seen me through it all, but I guess what my passengers would notice most is the toilet seat. My own maintenance idiosyncrasies include nozzle

service at 200-hour intervals and changing the main tires using recaps at every 100-hour inspection.

I went through FlightSafety initial training in 1989 followed by 100 hours of mentoring in-aircraft. I SFAR-train annually at Simcom and fly a checkride with an FAA Resource Pilot every six months.

Tom Berscheidt (former owner of TAS) thought I had something to offer to the MU-2 community and supported me in trying to prove him correct. He is still a part of Mid-Coast and deserved to be around to see the successful outcome of the program that he envisioned, oversaw and fought for.

With respect to my long-term plans (see single-pilot capability above), I hope to be in my Marquise cockpit until I am 80-plus years old. I think this is doable as long as the pilot in the left seat is young and fit and I can contribute my experience and offer emergency backup (as long as my presence doesn't increase the chance of medical emergency) from the right seat. 



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by Mark James

Approximately a decade ago the FAA adopted an Aging Aircraft Program (https://www.faa.gov/aircraft/air_cert/design_approvals/small_airplanes/cos/aging_aircraft/media/roadmapGAAgingAirplane.pdf) that caused all manufacturers to start evaluating programs to explore the effects of Widespread Fatigue Damage (WFD) on their respective aircraft. All manufacturers have since adopted programs to address findings in regard to the testing that was performed on their aircraft in relation to corrosion, cracking, etc. of the structures and components of these aircraft. While the findings for some manufacturers revealed extensive issues requiring numerous structural modifications and implementation of extensive repetitive inspection programs, as MU-2 owners you should feel fortunate that the testing

complied with by MHIA on their aircraft produced very few such results.

Out of these initial inspections, Service Bulletin 242 for A2PC aircraft and Service Bulletin 104-53/003 for A10SW aircraft were implemented, which have since then been updated to an Airworthiness Directive (2015-01-02). Many operators have yet to reach their mandatory inspection point, however numerous aircraft have already had the process complied with. The results are much less dramatic than the initial elevated concern would have indicated. The compliance time mandated by the AD is within 1000 flight hours or 3 years of February 26th, 2015, whichever occurs first or, for those of you operating under the factory maintenance program, at your next 2400 hour inspection.

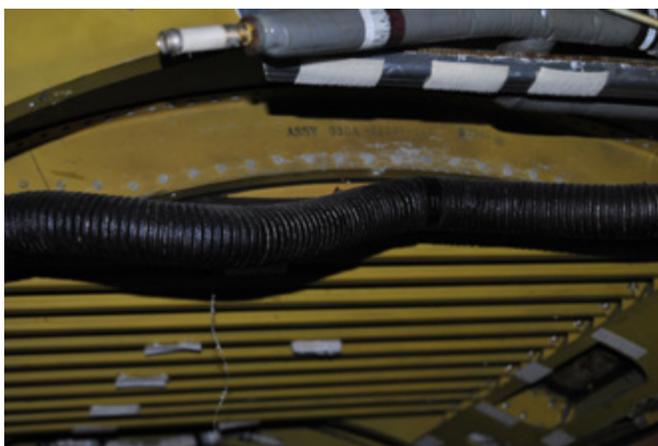


Mark James is currently Director of Operations for Intercontinental Jet Service Corp. He has a degree in Applied Sciences from Spartan College and is a current advisory board member for Tulsa Tech as well as a former member of the Allied Signal Service Center Advisory Board.

So, as an owner/operator, what can you expect when the time comes? The first part of the process is inspection. In this case, the inspection involves complete removal of all the interior including sideliners, headliner, carpet, and sealant in effected areas as well as all insulation. The goal is to provide 360 degree inspection access to the 2 main structural frames of the fuselage, being Frames 4610 and 5605.



The initial inspection process will be a complete visual inspection of all inner and outer flanges of these frames for any signs of cracking with particular attention being placed on the areas between and adjacent to rivet holes. In the event that the visual inspection proves to be inconclusive in any area, fluorescent penetrant or eddy current methods may need to be used. Also at this point, frame 5605 should be inspected for any signs of corrosion due to a conditioned air duct in close proximity to this frame.



In the event any cracks are found they will need to be repaired or the frame replaced. If a crack is found in a suitable location for repair then a repair approved by a DER can be utilized in lieu of frame replacement. This is generally done via some form of a strap over or encasement repair.



In the event that a satisfactory repair cannot be developed due to location, then a frame replacement will need to be performed. In the event of replacement, MHIA has developed kits which will be helpful and might avoid replacement of complete frames in some instances to help keep cost and downtime to a minimum.



For financial planning purposes, I would estimate the inspection process to be approximately \$10,000 and take 5-7 days. Repairs, if necessary, will be dependent upon location and complexity.

Although nobody enjoys the thought of having to perform these type of inspections because of the downtime and cost involved, as MU-2 owners you should take pleasure in knowing that with regard to the Aging Aircraft mandate imposed on all manufacturers, because of the outstanding engineering of the MU-2, the award winning support of MHIA and the capabilities of your Service Centers, your MU-2 will still be one of the least expensive aircraft alternatives for many years and flight hours to come. 

PROP2016

An End and A Beginning

by Carol Cannon

Everyone who attended PROP 2016 was surprised by the announcement that Turbine Aircraft Services would not be producing PROP after the final PROP city this year. But it's time for new blood to take over and put on what is, in my biased opinion, the best aviation safety seminar in the world. Mitsubishi Heavy Industries America, Aircraft Product Support Division, will be setting the stage for PROP 2018. The committee is already at work on it. They want to bring you the best of the best.

Having said that, let's review this year's PROP series. PROP was held in Dallas, Tucson and Cincinnati, all during April, spaced 2 weeks apart. See the stats in the chart below.

As you can see, the numbers are down. Why? Fewer cities (3 instead of 4), fewer MU-2s in the fleet (currently active = 263), time, money, you name it. Certainly not because of disinterest. Look at the number of Prospective Buyers on the stats chart. There were

old-time Owners/Operators and lots of new Owners/Operators. Lots of FAA and NTSB reps. There are still many people who will attend PROP - who wouldn't MISS it - maybe they just couldn't get there this year.

The formal PROP seminar began on Friday morning, finished around 5 PM on Friday, then started up again on Saturday morning at 8 AM through the end at 5 PM. The topics were: ADS-B, Single Pilot CRM, General Aviation and the NTSB Most Wanted List, Blind Faith: The Greenwood Mid-Air, Service Center Maintenance Panel, Accident Analysis (2 presentations), Advanced Aerodynamics, Engine Ops, Engine Adjustment Evaluation, AOA, Longitudinal Static Stability, Short Body Ops, and Single Engine Ops. Whew! Seems like a lot to fit into 2 days. And of course at the end of the day on Saturday, the coveted MU-2 models were given away as door prizes, 2 at each city. Honeywell also gave away a \$5,000 parts certificate in each city.

P.R.O.P. 2016 REGISTRATION STATISTICS

CITY	TOTAL A/C REPRESENTED	O/O	FAA	NTSB	S/C	VENDOR	DEALER	INS. CO.	MAINT. FAC.	PROS. BUYER	OTHER	TOTALS	TPE	RADAR	PH	M4
DALLAS	TBD	69	3	1	10	15	1	2	1	17	12	131	12	N/A	11	16
TUCSON		42	1	1	6	21	1	2	1	9	8	92	23	N/A	11	N/A
CINCINNATI		53	2	1	6	12	0	2	1	14	3	94	N/A	14	8	28
TOTALS	TBD	164	6	3	22	48	2	6	3	40	23	317	35	14	30	44
P.R.O.P. 2014 TOTALS	143	223	1	2	28	71	2	10	1	26	27	391	48	25	36	---
P.R.O.P. 2012 TOTALS	139	208	1	0	33	60	2	8	4	20	34	370	30	---	43	---



Carol Cannon has worked on Turbine Aircraft Services' projects for over 20 years. She manages the PROP series of seminars, the MU-2 Booth at the NBAA Convention, MHIA's Barrington Irving "Dream and Soar" events, other MHIA/TAS trade shows and appearances, and the MU-2 Magazine.



As in years past, there were 3 optional courses being offered. The TPE-331 Engine Familiarization Course, instructed by Don Ross, Comprehensive Airborne Radar Course, instructed by Erik Eliel, and the Pinch Hitter Course, instructed by Tom Goonen. These courses have been offered many times, but there are always new attendees who find great value in them. At the very last minute before the Dallas PROP, we were able to entice Roger Caudill (shown below) to give a (free) class on the M4 Auto Pilot. Roger was the flight test engineer on the certification of the M4 auto pilot, and he knows all the tricks and tips there are to know about the equipment. We were able to entice Roger a second time, and he presented the M4 Class right before the start of the Cincinnati PROP. Check out the numbers – 44 people attended his classes! Too bad we can't find someone like Roger who could do an SPZ500 class.

Exhibitor Room!!! What a great place that was. We had 31 exhibitors there - the most we've ever had. All of the Authorized MU-2 Service Centers were there, of course, and there were many new companies who wanted to meet the MU-2 group. All of the coffee breaks and lunches were held in the Exhibitor Room so that the companies represented could spend as much "free" time with the attendees as possible.



The Friday evening receptions were all held in the hangars of the Host FBOs for that city. Delicious food, cold beverages, really, really excellent local bands, and a 2-ship MU-2 Fly By (except for Tucson - too windy and bad runway/hangar angle). It was over too soon. Sorry, I didn't get any pictures of the Fly Bys, too busy singing to the music.

Over the years, the TAS team has spent many, many hours planning and implementing the PROP seminars. It's a bittersweet feeling for all of us, knowing that this group won't be working on PROP anymore. Dang, and we finally had it down!!

We'll miss you, but I know we'll see you again. 

SINGLE ENGINE APPROACH AND GO-AROUND



by Rick Wheldon

The single engine approach, followed by a go around, is one of the most misunderstood maneuvers of the SFAR profiles. I've heard pilots say that they would never go around single engine since the maneuver is more hazardous than landing with an airplane sitting on the runway in front of you. I've heard it justified that the "landing is assured" early in the approach so there will be no need to go around. Yet, there have been accidents where, had the pilot elected to go around, he would have easily landed on a second attempt. If the single engine approach procedures are properly followed, the transition to a single engine go around is quite easy.

Let's review the single engine go around, how it's properly conducted, and how a pilot can get into trouble.

The AFM and the MU-2 Checklist both contain the single engine go around procedure in the emergency section. Although the procedure does not have steps

which are memory items, the first few steps fall under the general category of "flying the airplane," which is the first thing to do in any emergency. The steps are:

1. Condition Lever (operating engine)... TAKEOFF LAND
2. Power Lever (operating engine)... TAKEOFF
3. Landing Gear... UP
4. Landing Light... RETRACT

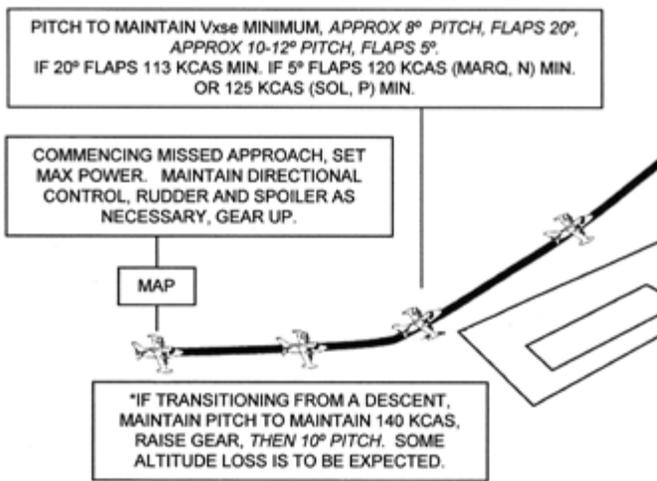
Step 1 should already be accomplished as part of your pre-landing checklist. The rest are simply adding power and getting rid of your drag items – flying the airplane! NO BIG DEAL, right?

The truth is, if you are flying the proper profiles, it is no big deal. On the proper approach profile, you should be no worse than on a 3° normal glideslope with the gear down and flaps 5° until you are committed to land. Airspeed should be 140 KCAS (130 KCAS minimum), and you would be carrying 65-70% torque on your operating engine. A go around (see Fig.1, which is an



Rick Wheldon is Vice President of Turbine Aircraft Services. He is an Aeronautical Engineer, and is a former U.S. Navy aviator and MU-2 Demo Pilot.

Figure 1



edited section of the SFAR 108 profile) would require merely adding another 30-35% torque (which is not a large increase and requires a small amount of rudder) while raising the gear and retracting the landing lights. Most important, you should maintain your airspeed and not pitch up immediately. As the gear retracts, slowly raise the nose towards 8-10° pitch to maintain that airspeed. Control forces are quite light in this configuration and control is easily maintained. You should expect a slow climb rate, but, except in extreme high, hot conditions, you will be climbing. Done correctly, you will lose some altitude during the transition to climb at heavier weights, but there will be less altitude loss when lighter.

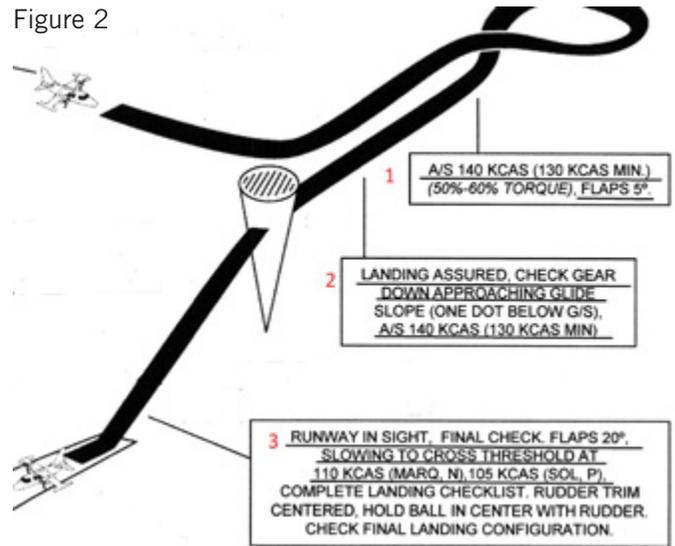
So, how might one get into trouble?

First is making the decision to go around late. An early decision to go around, with the pilot acknowledging that the approach is not going as desired, is far safer, easier to fly, and more conservative than attempting to salvage a deteriorating approach.

Second is being on the wrong profile. The checklist uses the term "Landing Assured" with several steps following, but not all of the following steps should be accomplished immediately. The MU-2 Training Manual (accepted by the FAA) has language that defines landing assured as, among other things, passing the outer marker on an ILS or similar glideslope capable approach, or abeam the runway in the visual traffic pattern. The profiles call for the gear to be extended at that point. However, they do not call for the flaps to be lowered to 20° and the aircraft slowed at the marker, as I've heard some argue.

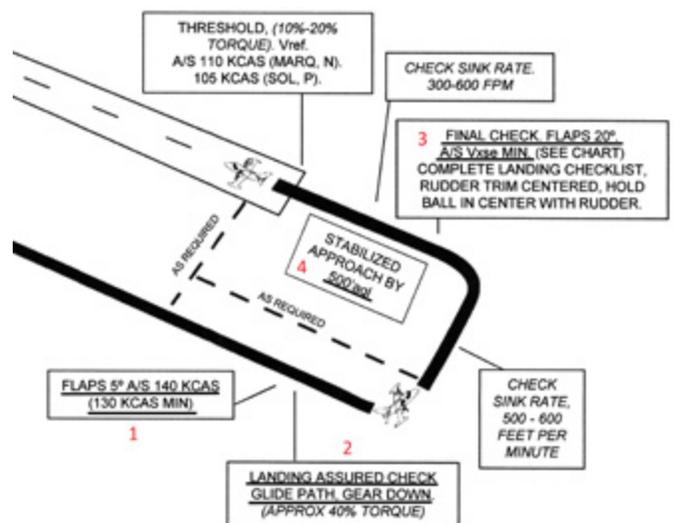
In the published single engine ILS profile (Fig.2, which also was edited to only show the final approach), the aircraft approaches the outer marker gear up, flaps 5° (point 1). The landing gear is selected down at the

Figure 2



marker (point 2) and the approach is flown flaps 5°, gear down. Airspeed is 140 KCAS (130 KCAS minimum.) With the runway in sight (and the pilot committed to land), the profile now calls for selection of flaps 20° and deceleration to the published threshold airspeed. The profile (point 3) calls for flaps 20° selection at a point well inside the marker with the runway in sight. If a single engine ILS is flown in this manner, a missed approach due to weather will always begin from the flaps 5°, 140 KCAS (130 KCAS minimum) configuration. We should point out here that it is not difficult to fly an ILS to a 200 foot minimum, then transition to flaps 20° and slow to the threshold speed in the final 200 feet. Another option for a low minimums approach would be to refer to the flaps up landing profile in the training manual, and combine the flaps up and the single engine procedures. The training manual profile allows for a flaps 5° landing, and the only adjustment would be to use a higher threshold speed for the flaps 5° configuration on a single engine landing.

Figure 3



Note that on a visual traffic pattern (Fig. 3, also edited), the profile calls for flaps 20° and deceleration below 140 KCAS only after having turned final with landing assured, at approximately 500 feet above the runway. Note the positions in the pattern where the pilot should select flaps 5° (point 1), gear down (point 2), and flaps 20° (points 3 and 4).

In contrast, I have heard pilots argue that “Landing Assured” at the outer marker allowed them to select flaps 20° and slow to a lower approach airspeed when passing the marker. Flaps and slowing are, after all, steps in the checklist immediately following “Landing Assured” and gear down. That is clearly not how the SFAR 108 profile is constructed, and it is actually illegal since SFAR 108 requires us to train and fly according to the published profiles as well as the checklists. Of greater concern, this mindset causes the pilot to be slower on the approach with more drag on the airplane. I will, at this point, repeat one of my favorite words of wisdom about flying, passed on by a very talented aero engineer. He said “Remember, airspeed is your friend!” (I might also add that “drag is not often your friend” during single engine operations.) When on the approach, before you see the runway and can comfortably ascertain that a landing is certain, you have better safety margins at the airspeed called for by the SFAR profile. A go around from flaps 20°, 120 KCAS will involve higher control forces during the transition. There would be less margin for error compared to a go around from the proper flaps 5°, 140 KCAS profile.

Let's look at the applicable portions from the FAA's Airplane Flying Handbook (FAA-H-8083-3A) regarding single engine landing procedures for additional guidance.

“With adequate airspeed and performance, the landing gear ...should be confirmed DOWN no later than abeam the intended point of landing. Initial extension of the wing flaps (flaps 5° for the MU-2)...can also be initiated on the downwind leg.”

“On base leg... V_{YSE} is still the minimum airspeed to maintain.” (V_{YSE} is 140 KCAS on a Marquise)

“On final approach, a normal 3° glidepath to landing is desirable... Slightly steeper approaches may be acceptable. However, a long, flat, low approach should be avoided... Maintain V_{YSE} until the landing is assured, then slow to $1.3V_{SO}$ or the AFM/POH recommended speed. The final flap setting (flaps 20° for the MU-2) may be delayed until the landing is assured.”

All of the above are consistent with the MU-2 profiles in SFAR 108.

To be fair, it should be pointed out that the FAA Airplane Flying Handbook also cautions against single engine go arounds. The problem is that the FAA is directing this language at pilots of underpowered piston twins. In contrast, the MU-2 usually has a sufficient power reserve to transition to a single engine go around, and

certainly has the charts in the checklist and POM to ascertain if there is single engine climb capability before commencing an approach. While a single engine go around in the flare should not be attempted, go arounds from 500 feet AGL at 140 KCAS are easily flown, and are a required maneuver per SFAR 108.

The MU-2 Expanded Checklist (and AFM) contains a Warning that single engine go arounds below 400 feet or after 20° flaps are selected may not be possible. It might be argued that this effectively limits weather minimums for an approach to 400 feet or higher, but obviously, under emergency authority with no better airports nearby, a pilot might elect to go lower. However, in a single engine situation, if there are other options, the PIC should seriously consider diverting from an airport where the weather was low to an airport with better weather and, if available, one that has a long runway with an ILS.

Another way to get into trouble on a single engine approach is to get low and slow. This will typically lead to big power changes, and the airplane must then be trimmed, and re-trimmed, and perhaps re-trimmed again to regain the published profile. Large control forces might be required during all these power changes. The aircraft also recovers slowly from the low/slow condition. To avoid this situation, when the runway is in sight, determined to be clear, and the pilot commits to land (at approximately 400-500 feet,) a slightly high glideslope and slightly slow deceleration from 140 knots is optimum. While the target airspeed over the runway is 110 or 105 KCAS, it won't hurt to increase that airspeed by a few knots (assuming you're not approaching to a very short runway.) One advantage of this technique is that the power will continuously be retarded and never added, which eases the transition. If flown correctly, upon passing the threshold, power will nearly be at idle on the operating engine. If you have been trimming all along, rudder trim will be close to neutral. Once you touch down, slowly retard the power on the operating engine, and anticipate yaw by pressing on the rudder pedal opposite the operating engine. Using this technique, the airplane should never leave the runway centerline.

So, in conclusion, if flown according to the proper profiles at the proper airspeeds, single engine approaches and go arounds are easily accomplished. When conditions deteriorate away from the proper approach profiles, a single engine go around is the most conservative and safest decision for the pilot to make. An early decision to go around is better than a late decision. Keys to success are airspeed control, knowledge of the profiles and configurations, anticipation of control forces, especially with the rudder and elevator, and maintenance of skills through practice and recurrent training. Get these maneuvers right in your training and your single engine approach in real life should end in a routine landing. 



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Safety First = Fleet Extraordinaire

Keller Companies, Inc.

by Kimberly Fish

Richard Keller, president of Keller Companies, Inc., and Bill White, Keller's chief pilot, have a relationship based on the highest safety standards and...well...sheer longevity. They defy most industry norms, having teamed together since 1969. Keller Companies, Inc., based in Manchester, NH, has owned four Mitsubishi twin engine turboprops since they entered the corporate air travel arena, and two are still flying in the United States and Canada. Keller has the distinction of being one of only two MU-2 owners still flying an aircraft he purchased new from the Mitsubishi factory. For Keller, that aircraft, Serial Number 322, was delivered directly off the assembly line in November, 1974. Even with a Falcon 10 in the hangar, the MU-2s in the Keller fleet are often the choice for corporate flight because, bang-for-the-buck, they're the most efficient and economical twin engine turboprops in the air. And SN322? It's still flying Keller Company employees to their jobsites, sales calls, and research opportunities as safely and reliably as it did in 1974.

Today, Keller employees travel to various, sometimes remote, locations conducting sales and overseeing installation of the unique Kalwall® day lighting systems. If you've walked under a diffused lighting canopy at an airport or been inside the Denver Broncos training facility recently, you have seen one of their products controlling natural light onto dynamic fields. Early in its history, the company founder, Robert Keller Sr., explored the efficiency of corporate air travel with a friend of his in the New Hampshire banking industry. It was natural for his son, Richard, to examine the cost-benefits of providing direct travel for his sales and development teams. Adding more business opportunities with the liberty of being back at the office by the end of the day sealed the decision to develop a corporate fleet. Richard's first experience in corporate flight was a Cessna 310 Riley Rocket, purchased in 1965, which was later replaced by his first MU2 B model in 1970.



Keller Companies Pilots

Matt McInnis, Paul Poulicakos, Paul Boening, and Bill White.

Bill White was a 21-year-old pilot, just hired to fly for Keller Companies, when they first started developing their fleet. Today, based on the near flawless track record from their 47-year tenure together, it's obvious that these two men agreed that "safety first" was more than a motto - it was going to be their business model. Bill has grown the Keller corporate fleet into an outfit with a mixed range of airplanes, multiple pilots, and a top tier maintenance department staffed with a chief of maintenance holding an A & P license with an IA-rating and two additional aircraft maintenance technicians also holding A & P licenses. They maintain their aircraft to a pristine standard of excellence, efficiency and safety, making the Keller Companies fleet a model for the industry. With capabilities to do most aircraft maintenance in-house, Bill relies primarily on Intercontinental Jet Service Corporation of Tulsa, OK when outsourcing major airframe, engine and avionics work for the MU-2s and Falcon 10. Bill attends the Mitsubishi PROP conferences and brings his whole crew

with him; his pilots and his maintenance team. He feels that understanding the manufacturer's programs is integral to the safe and efficient operation of his fleet. Each of the Keller corporate pilots has accumulated many thousands of hours in the air in MU-2s, and all appreciate the qualities that make the MU-2 ideal for cities and towns not directly served by commercial carriers. This flight department, with over 67,000 hours of flight time and over 48,000 trips logged by the MU-2s, has earned the respect of Keller employees who have come to rely on it for safe and timely business trips. This is a credit to the pilots' training, quality maintenance, and the airplane they prefer to use.

Bill loves to be in the air, and he loves flying for Keller Companies — the satisfaction echoes in his voice. The knowledge and experience in his conversation indicate he delights in the qualities of the MU-2 and its distinctions for speed, comfort and reliability. It gives him great pleasure to see that love of flight and safety reflected in the other pilots at Keller Companies, and



Keller Companies Maintenance Crew

John Picard, Matt Malloy (Chief of Maintenance), and Michael White.

also in the pilots he meets and trains as an MU-2 flight instructor. He conducts ground and recurrent training every March, partnering with Reece Howell, and offers this training for interested pilots in the northeastern states.

Establishing a “zero defects” maintenance record and a flawless safety history is key to understanding the mindset at Keller. Hours in the air are significant, but knowing the latest guidelines and flying to SFAR 108 standards is at the heart of their workday. Bill takes safety parameters into every consideration, knowing that he will scrub a flight if weather or maintenance status is of the slightest concern. That standard for excellence is reflected in one of the core business philosophies for Keller Companies, which is that their employees come first. No sales opportunity or product deadline is too important to risk people. Carrying that one step further, Richard Keller isn't shy about sending a pilot and plane to a location if that means he can collect an injured or

sick employee and get them to a medical center in time of crisis. This business model reveals the character of Richard Keller, maybe even more so than the number on his company's bottom line.

White doesn't procrastinate either. He began installing 'NextGen' ADS-B compliant upgrades to the Keller fleet long before the pressure to do so was felt by impending FAA guidelines. As of spring, 2016, the entire fleet had been upgraded with Garmin Touchscreen Avionics for improved weather and in-flight traffic information.

Who knows how much longer Keller Companies will be operating their MU-2s? However long that is, Richard Keller and Bill White have shown us how to do it right.

It's this commitment to safety first, a love of flight, and a desire to see employees efficient in their work environments, that has led Keller Companies to become an industry leader. It's the love of a safe and economical airplane that keeps them behind the nose of an MU-2.

(continued on page 20)

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A Salute to Serial Number 322



Keller Companies MU-2, Serial Number 322 was first put into service just after radio installation at Stead Avionics, Manchester, NH. The aircraft was purchased with no radios in September, 1974 while still on the production line and was flown home to Manchester on November 3, 1974.

It takes a rare and special person to buy an airplane and continue to fly it for four solid decades. When Richard Keller traded his first MU-2 B model in on a newer, shinier model in September, 1974, he had no idea he would be that person. Like most twin engine turboprop enthusiasts, he was looking at the new Mitsubishi M model because of greater range and payload, plus it was 15% faster than the original B model he owned. Taking delivery on November 3, 1974, pilot Bill White and co-pilot Norm Beauregard flew back to Manchester, and Bill settled into the joys of new airplane ownership, flying an aircraft with all the bells and whistles of its time. With their New England ingenuity firmly in play, they knew that to keep this beauty flying flawlessly in the air, they would be proactive in modifications. Over time they increased baggage area, and, in 1979, they upgraded their engines to the Dash-10 SRL model. White enjoys knowing that some of the best hands in the industry were responsible for the success of 322. Joe Megna, Sr.,

then a mechanic at Jet Air Corporation of Clintonville, WI, took the reins on the modifications. Megna, now working with the Product Support team at Mitsubishi Heavy Industries America, Aircraft Product Support Division in Addison, TX, is regarded as one of the best in the industry, and, to his credit, SN322 is still sailing through the skies as smoothly as ever. Richard Keller and Bill White do not have a disposable mentality. They invest, re-invest, and care for their 42-year old airplane with regularly scheduled, FAA-mandated maintenance and inspections, new coats of paint, interior updates, and Garmin Touchscreen installations for 'Next Gen' compatibility. That tender loving care makes their original SN322 a most reliable and versatile airplane. With SN322's pristine safety record and with it looking as good as new, this MU-2 maintains the speed and fuel efficiency needed to move Keller Companies employees across the United States and Canada. Kudos to Keller Companies, Inc. for being diligent and faithful to the MU-2. 

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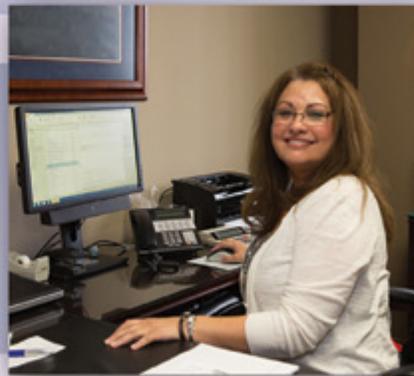
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