

MU-2

Magazine

OCTOBER 2014
Fourth Edition



What's inside:

- New MU-2 Service Center: Professional Aircraft Maintenance, Bakersfield, CA
- MU-2 Owner/Operator Roy Kinsey
- NBAA 2014 Preview
- Maintenance: Are Your Arteries Plugged?
- Technical: Shutting Down Your Engine



www.MU-2aircraft.com

Photo: Jim Tobul,
MU-2 Owner/Operator

A Commitment To The MU-2

As we head into the fourth quarter of 2014, it is a good time to reflect on our overall successes in safety and our number one safety rating from business aviation safety guru Bob Breiling.

This issue comes at a time when we must review our training culture established with the FAA some eight years ago by the institution of Special Federal Aviation Regulation (SFAR) 108. As pilots and owners who fly the MU-2, we have generally done an excellent job of flying by the rules, with the result being only two fatal accidents in over eight years.

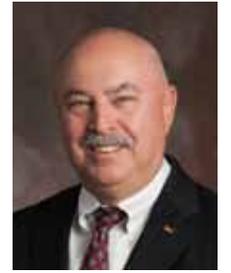
Now is the time for us to reaffirm our commitment to carry that safety attitude into the future. It will be easy to look for the easy way out or to become complacent in our attitude about training, but that will only cause us to fall back into old habits and can potentially harm the best in class safety record that we have worked so hard to establish.

This issue of MU-2 Magazine brings us several new and important pieces for your reading pleasure. We are announcing an addition to the MU-2 family, our new Authorized Mitsubishi MU-2 Service Center in Bakersfield, California. You can read about them in Thelma Pence's article.

In addition, Rick Wheldon digs deeper into the issue of engine failures, especially those that may be more subtle than those experienced during takeoff. This important article brings you closer to the "other side of the story" when it comes to recognizing and handling engine failures that may be harder to detect. It brings about a need for us to review our training procedures and to prepare ourselves for an engine out during all phases of flight.

Some important maintenance tips (nozzle tips, no pun intended) on maintaining your fuel nozzles is presented by Joe Megna. This one can save you dollars in the end and will improve your engine's performance and longevity.

Lastly, read the owner profile on Roy Kinsey. Roy tells us of his adventures at the Pensacola Beach Air Show and his involvement with World War II veteran pilots. Roy also tells us about his history flying the MU-2.



Have a great quarter and please let us know of any ideas that you may have for interesting people or articles in the next issue of MU-2 Magazine.

Pat Cannon

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



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 (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.



MU-2 Magazine, October 2014. Cover photo by Jan Glenn, taken during PROP 2014 photo shoot.

Notice: Although this publication will provide you with useful information regarding the operation of your airplane, it is not and cannot be a substitute for your compliance with all applicable requirements from the appropriate airworthiness authorities.

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Authorized Mitsubishi MU-2 Service Center News

By Thelma Pence

Thelma Pence is the liaison between Mitsubishi Heavy Industries America, Inc. (MHIA) and the Authorized MU-2 Service Centers. Thelma is responsible for Service Center audits, parts inventory levels and other reports for MHIA contract compliance. Thelma is involved in trade show representation as well as in the planning and program development of specific customer seminars and meetings in support of MU-2 Service Centers.



Service Centers

Professional Aircraft Maintenance, Inc. (PAM), located in Bakersfield, California, has been appointed as a new Authorized Mitsubishi MU-2 Service Center for the West Coast Region of the United States. David Smutny, President of PAM, and his team possess many years of experience maintaining and repairing a substantial number of MU-2s in California. Mitsubishi Heavy Industries America, Inc. (MHIA) is pleased with this new addition to the MU-2 Service Center network.

MU-2 owner/operators will find Professional Aircraft Maintenance, Inc. not only trained and experienced in MU-2 matters, but PAM will maintain a large inventory of MU-2 specific parts. With their addition to the MU-2 Service Center network, owner/operators can be confident in PAM's MU-2 knowledge and access to the best product support organization in the industry (2014 Product Support Survey conducted by Aviation International News).

“We are extremely excited that we are the newly appointed West Coast Mitsubishi Service Center. We are looking forward to meeting and developing good relationships with the MU-2 owner/operators here on the West Coast. Whether here in our shop or traveling to onsite locations, we are here to meet all maintenance or repair needs.”

- David Smutny

MHIA encourages MU-2 operators to visit Professional Aircraft Maintenance, Inc. for their maintenance needs.

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Pictured from left to right: Tricia Mathews (PAM), Rick Wheldon (TAS), David Smutny (PAM President), Pat Cannon (TAS), Ralph Sorrells (MHIA), Ken Takeuchi (MHIA), and David Finley (TAS).

ENGINE FAILURE AT 17,000 FEET.
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Roy Kinsey, Flying With WWII Veterans

By Mike Taylor

Mike Taylor is a former aircraft design engineer, 24-year aviation industry veteran, current marketing consultant and private pilot.

Owner/Operator Spotlight

My introduction to Roy Kinsey, our MU-2 pilot/owner spotlight in this issue of MU-2 Magazine, was through a forwarded copy of Coastal Lifestyle Magazine. That title alone sounds refreshing. And anyone who's flown the coastlines of the 50 U.S. states can appreciate the diversity and majesty of their landscapes. Flying coast to coast, the MU-2 pilot knows a 2,500-plus nautical mile journey will require a fueling stop. However, from the Gulf Coast, the MU-2 can reach many locations in the lower 48 in one hop. And that is precisely where Roy Kinsey does some of his most enjoyable flying.

Roy Kinsey has been flying since 1965. He's logged over 1,000 hours in the MU-2. His flight experience includes the J3 Cub he soloed in, Cessna 140 and 170s, Beech Bonanzas, and pressurized Beech Barons (Barons adding another 1,000 hours to his logbook). Having owned and flown a variety of aircraft, he most fondly remembers taking ownership of his current MU-2 in December of 1997.

Earlier this year Roy Kinsey participated in a July 4th celebration that included flying in his 1943 Boeing Stearman in a ceremony honoring World War II veterans. The publishers of MU-2 Magazine informed me, and Roy, that an upcoming issue was in the works and they were "wondering if [he] you would be willing to be our 'MU-2 owner/operator highlight.'" It was my role to call Roy for an interview.

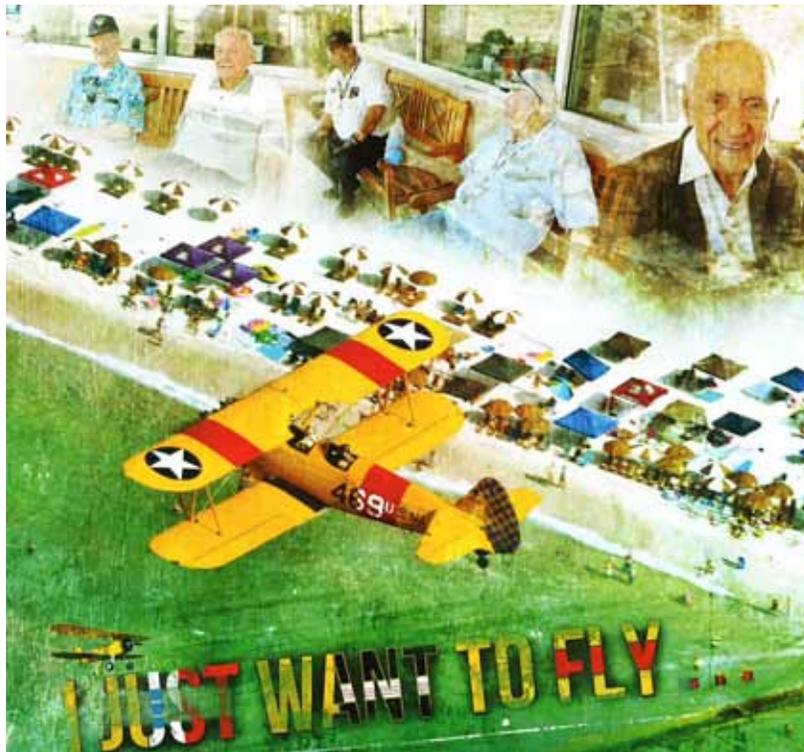
First questions revolved around Roy's flying experience. Truth be told, I really wanted to proceed to the Stearman stories. Today's pilots who fly these great aircraft usually have a long pedigree of flying experience. They'll tell you a Stearman is not easy to fly. It's big, the cockpit is open, and its radial engine and tailwheel configuration make it difficult to see forward.

The big rugged Stearman biplanes of 1930s were built in large numbers to train U.S. Army Air Force, U.S. Navy, and Royal Canadian Air Force personnel. The Stearman is a living tribute to the military pilots who did their primary training in them. I was interested in learning how Roy arrived at owning and flying one,

in addition to what brought him to the MU-2.

Roy and I talked about our common interest in flying Cubs, both having soloed in these classic designs. From a non-aviator's perspective, the Cub and Stearman might look like twins with their often-yellow paint and tailwheel configuration, were it not for the stacked wings on the Stearman. Like many who learned to fly in a Cub, Roy's been flying for nearly 50 years.

When asked what brought him to the MU-2, he coolly replied, "I'm the typical owner who started in pistons and singles." But as many avid pilots quickly do, Roy moved up the scale and soon found himself making use of a "P-Baron," a popular twin-engine piston aircraft with a pressurized cabin.



Roy recounted an experience he had with an engine shutdown, in-flight in the Baron. He asserted that this experience led him to the purchase of the MU-2. Although initially there was concern about MU-2 engine costs, his experience with the aircraft has proven this to be unwarranted. He's encountered only one trip delay, for mechanical reasons, in all of his MU-2 flying. Roy reinforced his conviction, adding that his service representative, Mark Cobb, was quick to resolve the issue with easy to locate parts.

"Fast" was the word most conspicuous in Roy's explanation for scaling up to the MU-2. Its reputation for speed had long been

appealing to him. He also started looking at them because they were less expensive than other turboprops, such as the Beech King Air. He noted the MU-2's physically smaller size and punctuated the fact that it fits nicely in a standard T-hanger. Besides, Roy added, "It's typically just me and one other passenger flying in it." Only twice has he had seven people on board.

What "clinched" the deal for Roy, was a trip in the P-Baron to Alaska. He had stopped in Ketchikan for fuel and witnessed an MU-2 landing. Into the FBO walked Franklin Graham, president and CEO of the Billy Graham Evangelistic Association and a long time MU-2 owner/operator. While halfway to Anchorage,



Carey Hardin (Stearman #469) over Pensacola, Florida.

Graham's MU-2 passed Kinsey's Baron, to his surprise. Roy emphasized that the Baron is well regarded as a "fast airplane."

Today, Roy simply equates his decision to, "It saves a bunch of time compared to the P-Baron." His MU-2 is a short body M-model, "the last of the 3-bladed planes," he added. "It has plenty of room, it's a fantastically capable and reliable airplane." Then there was the type specific training required to operate the MU-2. It was more than he had ever known in any other aircraft, but quickly realized it was well worth it.

A coastal lifestyle for Roy equates to living in the Florida panhandle and practicing law. He does this with his wife and daughter, the latter also a practicing attorney and newly elected circuit court judge, the congratulatory father pointed out.

Roy was eager to talk about the Stearman flying event he organized. "This may be the last opportunity we have to do something like this. We are losing these old pilots every day. You can't find a better group of people. They are polite and extremely appreciative," he commented.

The flying was to be done in conjunction with the Pensacola Beach Air Show that took place in July. In preparation, Roy was informed that carrying passengers would not be permitted during the fly-in. So they decided to take the veterans up before the show.

The plan was to go early, and Roy presumed correctly that these men would be willing. "When I told them that if we briefed quickly and got them in the airplanes by 0900 everyone would be able go to the beach, they sprang into action," he remarked. The youngest veteran was 89.

The originally planned five-ship Stearman formation had reduced to three. Both cancellations were due to electronic flight instrumentation problems, and Roy delighted in the fact that none of the more-than-70-years-old Stearmans had problems with any of their 1940s vintage equipment.

Roy's first passenger was Navy F6F-5 (Hellcat) pilot Dick Pace, a senior at Dartmouth College in 1941 who joined the Naval Aviation Cadet training program. The war started while Pace was doing his flight training and he later became a flight instructor.

Roy depicted Pace as, "a true gentleman, a rare individual, the type who is hard to find today." He added, "Still young in his 90s, Dick recently came to my office to return a book I lent him and was driving a bright red, two-seat Maserati roadster with the top down."

Roy pointed out that Pace had been to the National Naval Aviation Museum at Naval Air Station Pensacola and "borrowed" the flight suit he had donated to the museum so he could wear it during his flight. You can watch a video of their flight here... www.youtube.com/watch?v=S3Wc_b9xdr8.

Ed Williamson, Army Air Corps B-17 pilot, was a late addition



A 1975 Mitsubishi MU-2B M-model (N261WB) and a 1943 Boeing Stearman (N60198) owned and flown by Pensacola, Florida attorney Roy Kinsey.

to Friday's flights. Roy recounted, "An old friend of mine, Jim Wilson, who was a Vietnam-era Marine pilot knows Williamson and called me Thursday to ask if Williamson could fly. I told Jim that Williamson probably wouldn't be able to fly as all seats were committed."

Things changed. As there were only three airplanes to fly the five veterans scheduled for Friday, two flights became necessary. Roy notified Williamson of an open seat. Eager to fly, Williamson drove to the airport that night to make sure he could find it and could be there by 0730 Friday morning.

Roy noted they had to scrub several media flights late Friday due to a thunderstorm. But Saturday's weather was an improvement. In addition, Army Air Corps Stearman pilot Jim Ratliff and his grandson had arrived from Atlanta prior to the storm. This meant four Stearman aircraft would be available for Saturday's flights.

"Once again the veterans arrived at Pensacola Aviation Center well before 0830, and embraced the same plan we used Friday for a quick briefing and sending the first flight to the beach at 0915. We again got wonderful handling from Air Traffic Control in spite of air traffic being much busier than Friday. We again used the call sign 'Veterans Flight' and got the first flight in the air on schedule," said Roy.

It has been said by the daring among pilots, "For adverse aileron yaw there is none better than a Stearman." Yet the aircraft remains one of aviation's most popular. Likewise, Roy Kinsey affectionately refers to his MU-2 as "an airborne Harley-Davidson. It's big, loud and fast. Although the Harley is not known for its speed, in the MU-2 there are no blue haired drivers pulling out in front of you," he punctuated.

Roy uses his MU-2 as a business plane. In his practice, he represents injured persons (auto injuries), performs criminal defense, and represents law officers accused of a crime while on active duty.

He outlined a one day-trip where he met a witness at Dekalb-Peachtree Airport FBO, then another in Charlotte, North Carolina making use of the airport's courtesy car there. The trip would typically have taken three days. Instead he was home for dinner that same day. Roy pointed out, "Every community has an airport nearby. It was planned this way after the war. With private aircraft it is possible to effectively fly point-to-point." Roy added though, he is not flying for business as much as he used to, noting that more is being done in the legal field electronically today.

Roy travels throughout the U.S. in his MU-2. Additionally, he



Roy Kinsey (Stearman #708) and Dick Pace, Navy veteran.

has flown to the Bahamas and Canada. He sees the Bahamas as the perfect trip for his MU-2. Having bought a place in Treasure Cay in the northwest Bahamas, he obtained an overflight permit allowing him to clear customs in Pensacola.

As a veteran pilot, one is constantly training and polishing skills, much like adapting to the changing legal profession. Correcting for aileron yaw in the Stearman and attending recurrent training on the MU-2, both are punctuated with reminders that the flying lifestyle has both challenges and rewards.

Although the Stearman flying event was planned as a one-time event, Roy says he is being pressed to do it again. He enjoys national Stearman events such as the annual gathering in Galesburg, Illinois. Roy stated, "Putting veterans back in the cockpits in which they learned to fly was a small way for us to honor and thank them." It's an endeavor replete with rewards.

To view the Coastal Lifestyle article visit (article starts on pg 11)...
www.coastallifestylemagazine.com/ebooks/2014-08-09/index.html.



The gentlemen of the Stearman flight (left to right): Bill Andrews (Navy vet), Earl Stockton (Army Air Corps vet), Dick Pace (Navy vet), B.T. Smith (Navy vet), John Johnson (Navy vet), Ed Williamson (Army Air Corps vet), Roy Kinsey (Stearman #708), John Beard (Army Air Corps vet), Carey Hardin (Stearman #469), Phil Webb (Stearman #42).

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Are Your Arteries Plugged?

By Joe Megna



Joe Megna is General Manager of Jet Air Group, an Authorized Mitsubishi MU-2 Service Center in Green Bay, Wisconsin. Joe's career started with Jet Air in 1978 after serving five years in the U.S. Navy where he maintained attack aircraft onboard Pacific fleet aircraft carriers. Joe has completed training on the MU-2 at FlightSafety, Honeywell and Simcom. He is also experienced with Chadwick-Helmuth vibration analysis, starter generator overhaul, and fuel nozzle cleaning and testing.

As you probably know, blockage in the heart's arteries is the leading cause of heart attacks. If you could clean out your arteries once a year, do you think your life span would increase dramatically? Same applies with fuel nozzles and aircraft engines.

As fuel flows through the nozzles to the combustion chamber, restrictions develop in the fuel nozzle filter screens and passages that will limit the amount of fuel for combustion thus causing reduced engine performance.

Additionally, carbon build-up or "coking" can occur in the fuel nozzles causing streaks in the flow pattern. This streaking will eventually cause carbon build-up on the combustion liner, which could break off and cause erosion to the hot section. This "coking" of the engine nozzles is inherent to the 331 engine, so this situation should be of no surprise to maintenance personnel in the field. Keeping the fuel nozzles clean will help eliminate these potential problems.



Fuel nozzle spray pattern.

What is the biggest enemy of an engine turbine section?

EROSION. By cleaning nozzles more frequently, you can help reduce the chance of finding erosion when a hot section inspection is completed. With engine hot section costs going higher and higher, if you could eliminate a turbine wheel or stator needing to be rebladed or replaced due to erosion, the cost of the extra nozzle cleaning would be an investment well worth it.

What is the proper cleaning interval of your engine fuel nozzles?



Flow testing a fuel nozzle.

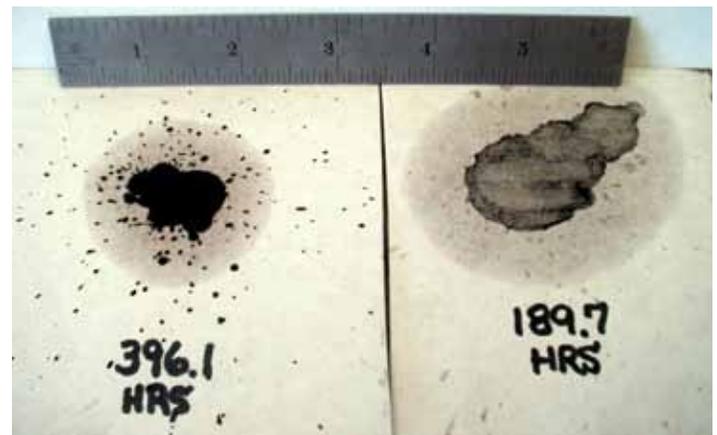
The engine manufacturer's maintenance manual recommends every 400 flight hours. In many cases the engines nozzles are being cleaned and tested only every four years or so. After cleaning and flow testing nozzles for more years than I would like to admit, I would argue that the manufacturer's interval is too long. I feel that nozzle cleaning should be accomplished at 200 hours or less to maintain optimal engine performance and reduce the chances of carbon build-up. NOTE: The PT6 engine is noted

for not having this carbon build-up problem, so the 400-hour cleaning interval is satisfactory.

For the MU-2, this shorter interval will ensure that the turbine section is operating at its optimum performance and will operate to its designed life expectancy. I also feel that the shorter intervals should increase the value of the aircraft. If I was looking to purchase an aircraft and saw that the operator was doing everything possible to ensure that the engines were being maintained to the highest

standards, this would be reflected towards the value of the aircraft in my opinion. As we are all aware, the engine status and condition are at the top of the list when purchasing an aircraft.

If engine performance and reduced engine inspection costs appeal to you, cleaning your engine's fuel nozzles at shorter intervals is the best thing you can do. While modern medicine does not give us the choice to clean our arteries, keeping your engine fuel nozzles clean is a choice you can make.



Carbon build-up inside a fuel nozzle.

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- Lots of MU-2 talk



Shutting Down Your Engine

By Rick Wheldon

Rick Wheldon is Vice President of Turbine Aircraft Services. He is a former Naval Aviator, Aeronautical Engineer, and MU-2 Demo Pilot.

Identifying a failed engine seems like a simple concept—the engine quits, the airplane yaws, and you react appropriately. Actually, there can be subtleties involved, and part of the job of being a good pilot is to be prepared for those events. Rule #1 for handling all engine malfunctions, which is not so subtle, is FLY THE AIRPLANE! Don't worry about identifying the failed engine unless the airplane is under control and stable, trimmed with the ball close to center, the operating engine powered up appropriately and the airplane configured so that it is performing in the expected manner. A properly operating NTS system gives you plenty of time to control and stabilize the airplane. With that in mind, let's look at some of the factors to consider when identifying a failed engine.

For several engine malfunctions, language from the AFM states "identify failed engine by power asymmetry and engine instruments." That is the nearly universal guidance offered by all multi-engine instructors and manufacturers. The AFM further states "if engine failure occurs, or if a sudden loss or significant fluctuation ($\pm 7.5\%$) of indicated torque pressure occurs, as indicated by airplane yaw, promptly shut down the affected engine..." If an engine fails and you are carrying any amount of power, yaw and sound would probably be your first alerts. Once alerted, after you establish control of the aircraft, you should confirm which engine failed by looking at the engine gauges, then shut it down.

What if the engines are at flight idle when the engine quits? You would experience little yaw. But, if you have ever done an NTS inflight check, you would know that the NTS pulsed as the RPM declined, resulting in a slight oscillating yaw. You could use this oscillating yaw as a cue to look over at the engine instruments, and you would see a declining RPM. You would most certainly notice the malfunction when you next advance the power levers and only one engine responds. Upon recognizing the failure, power up on the good engine and configure

the airplane for the single engine condition. A good rule of thumb after an engine quits is to set the remaining engine at double the torque required for two engine flight in your current configuration, and then add 10%. Also, immediately act to reduce drag, including retracting landing gear, landing lights, and, when above the normal flap retract speed, flaps. Set up a zero sideslip by banking into the operating engine. If approaching an airport, a single engine go-around might be your best option. Only after completion of these actions should the pilot address the engine shutdown.

What might you see on the failed engine's instruments? I once read this statement: "No engine parameter/indication can change without affecting some other engine indication or parameter." This makes sense—there will always be multiple engine instruments indicating a failure, and abnormal indications depend on the failure mode. Many engine failures involve a loss of thrust, so torque will most likely be zero or low. In a simple flameout, you can also expect low EGT (ITT), zero fuel flow, decreasing RPM as the engine NTS system operates, and decreasing oil pressure. Other failure modes would display different deviances. For example, a prop shaft coupler failure would result in loss of thrust, but the pilot would observe the engine RPM stable at 103%-105%, the torque at zero, with the fuel flow and EGT (ITT) low. The propeller would also have feathered on its own. A fuel control spline failure (for fuel controls not previously modified to fail low) would exhibit a surge in thrust which could not be controlled with the power lever, with high EGT (ITT), possibly



Shutting Down Your Engine (continued)

exceeding limits, high fuel flow and normal RPM. Another failure mode that has occurred is lack of engine response to power lever movement. This failure is subtle, might only be recognized when the power is retarded for descent, and may or may not require an engine shutdown. If it occurred with high cruise power and did not correct itself during the descent to warmer temperatures, the power may be too high for landing and an engine shutdown would be appropriate.

For every failure mode described above, multiple engine instruments/indications are pointing out the malfunctioning engine. Notice that I did not recommend using “dead foot, dead engine” as the primary means of identifying a failed engine. This is because the spline failure will increase the thrust on the faulty engine rather than decrease the thrust. Consequently “dead foot, dead engine” would incorrectly identify the malfunctioning side. Instead, the “dead foot, dead engine” technique can be used as another tool to investigate which engine has failed.

The good news is that you don't have to react differently for the various failure modes. For each and every one of these modes, use the engine shutdown procedure. This procedure is essentially complete with the CONDITION LEVER at EMERGENCY STOP and the POWER LEVER at TAKEOFF. Yes, there are other “clean up” items on the ENGINE SHUTDOWN checklist, but after these first two items are addressed you can take your time and get the rest of the items at your convenience.

In the above discussions of failure modes, I delayed mention of engine fires. The engine fire warning light may be an indication of a fire or pneumatic leak outside the engine but within the nacelle, or it could be a false indication. For a pneumatic leak such as a plenum rupture, it is very likely that other engine parameters or a flameout would confirm the failure. Remotely possible would be a fuel or oil leak with an ignition source in the nacelle. Engine fires seldom require immediate action, so “flying the airplane” again becomes first priority. If an engine fire indication occurs right after takeoff, wait until a comfortable altitude and airspeed have been attained (I use a minimum of 400 feet and 130 knots, or higher) before shutting down the engine. Also, don't forget that you have a set of eyeballs. On our high wing MU-2 airplane, you can easily check the nacelle through the cockpit side window and confirm if fire or smoke is visible. I know of one instance where a pilot with an engine fire indication elected to leave the engine online after inspecting the nacelle, since he was in heavy icing conditions with low minimums weather. Maintenance later determined the fire loop had failed.

Your Flight Manual contains a number of limitations related to the engines which might require shutting down the engine. I think the most important notion here is that an exceedance should be “uncontrollable” to warrant a precautionary shutdown. If you can control the engine to eliminate the exceedance, then a shutdown might not be necessary. (The amount and duration of the exceedance should be noted and reported to maintenance.) If you see only one engine indication out of limits, cross check the other indications. You might just have a gauge malfunction.

Remember, engine operating parameters are interrelated, and no likely engine malfunction will occur without it being evident on several gauges.

To summarize, for all engine problems, control and stabilize the airplane first. Then, and only then, consider the engines. Don't act hastily. Acting slowly and deliberately makes it far more likely that you will respond correctly to the engine malfunction. If you've thought about and practiced for these issues ahead of time, your subsequent landing will be a non-event.



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- EXTENSIVE OVERHAULED/ EXCHANGE ROTABLES INVENTORY AVAILABLE
- HARTZELL 3 AND 4 BLADE HUBS
- TPE331 -1 THROUGH -10 SERIES ENGINES
- BROKERAGE SERVICE FOR HARD TO FIND PARTS
- SURPLUS INVENTORY PURCHASES
- CONSIGNMENT INVENTORY MANAGEMENT SERVICES PROVIDED BY A PRODUCT SUPPORT STAFF CONTINUALLY RECOGNIZED AS THE BEST IN THEIR FIELD.

AIRCRAFT AND ENGINES

- ENGINE PURCHASING AND SALES
- AIRCRAFT SALES
- AIRCRAFT MANAGEMENT
- BUYER/SELLER CONSULTING
- AIRCRAFT ACQUISITION



CONTACTS:

Rick Forbes
(972) 248-3108, x302, O
(214) 649-2290, C
rforbes@turbineair.com

Grady Foster
(972) 248-3108, x306, O
(214) 649-0977, C
gefoster@turbineair.com

David Finley
(972) 248-3108, x213, O
(214) 649-2288, C
dfinley@turbineair.com