The following examples are a collection of real-world approaches how business aviation ground handling companies, air operators, and catering providers manage front line risks in a COVID-19 environment. The listed examples are verbatim information provided by such companies.

A Fixed Base Operator (FBO) provides a wide range of ground handling services such as fuelling, passenger handling (including security and facilitation), and parking and towing of aircraft, and often includes maintenance as well as flight planning facilities.

A business aviation air operator can be engaged in the operation of an aircraft for both commercial and non-commercial purposes.

A catering company provides catering to an air operator and is usually employing the services of an FBO to deliver its goods to the airplane.

Example 1 – FBO Operation (Ground Handling)

We initially had daily management meetings (in person and virtual), eased off to weekly, and now we are down to updates as required. Staff were given live updates via email in addition to a hard copy posted on our safety board.

We sent this via email to tenants and all upcoming arrivals.- Due to the ongoing concern of COVID-19 our procedures are continually evolving to reflect the latest updates issued by the W.H.O. (in addition to all external resources that we find helpful) to assist in minimizing the risk associated with the outbreak.

As part of our COVID-19 procedures, our staff may utilize additional heightened PPE and precautions for dealing with aircraft and crew that will include - no entry by our staff into the aircraft (catering etc. will be left at the stairs of the aircraft).You may see us wearing hazardous particulate suits, masks, gloves, and goggles.

We have increased our efforts to keep our facility sanitized and in addition to the hand pump sanitizer stations positioned throughout the facility we have also increased our scheduled wipe downs of all touch points in the lobby area, line crew room, and the 2nd floor pax and pilot lounges, in addition to all GSE.

If your company has a COVID-19 procedure, please share with us so we can work together to ensure the utmost safety for all involved. If you have any “at risk” passengers on board, please share this with us ASAP so we can initiate our plan.

Other points that have been covered:

- We handle quite a few medivac flights and we have worked in conjunction with the ambulance service to ensure that all involved are protected
- Flight crew will have full PPE (in addition to medics etc.) and once the patient is off the aircraft, they will dispose of their ppe into a garbage bag that will be transported off site by the ambulance crew. The aircraft will then be fully disinfected prior to the next trip or maintenance staff allowed to commence work.
- We have regular charters that take workers to camps and we have set up a lounge for them in an empty hangar. They have access to washrooms, we provide coffee, water, hand sanitizer etc. When the aircraft is ready to depart, they are escorted by the crew airside through a security gate (they don't come in our lobby - period) when the aircraft arrives, they are again escorted through the security gate to the parking lot. This provides our staff with an additional safety buffer for social distancing as their pax load is usually 15 or more. The hangar they use is then cleaned nightly.
- We have shut down our coffee and water stations to tenants/staff. We ask tenants to only come to the lounge if absolutely necessary. We have stantions surrounding our front desk to ensure distancing, we provide pens (don't use ours) for customers to sign tickets, and we constantly encourage social distancing (spatial awareness) by asking people to utilize all lounge space.

Example 2 – FBO Operation (Handling)

- At each of our locations all employees are required to wear masks in all customers areas within the facility and on the ramp. They are allowed to remove the mask in the line office to drink water and eat.
- We have placed hand sanitizer stations at each location throughout the FBO.
- We have adjusted schedules to create separate crews. For example; we have a group of CSRs that work Sunday-Wednesday and a group that works Thursday-Saturday. We took this step to protect the staff in the event one member gets infected they do not have contact with the entire staff. We have scheduled the same way on the Line.
- In the event that an employee has symptoms of the virus or tests positive we are mandating a 14-day quarantine. We have implemented a policy that is signed by each employee that we will compensate the infected employee during their 14-day quarantine provided that they seek medical attention and can provide documentation showing their in-person or virtual visit with a physician. We felt that this would encourage employees to not work when they are sick and could possibly infect others. In order for that employee to return to work they must be symptom free for 3 days and it must be at least 7 days after their first sign of symptoms. The employee must also obtain a note from their physician that they are clear to return to work.
- We have instituted a call among all network locations including all managers where we are able to update each other on the status of employees, supplies, airport dynamic, traffic, etc.
- We have a weekly call with all locations, the Airport Director and the Airport's Director of Operations to talk about any changes locally or globally. This allows the FBOs to talk about steps they are taking and gives the Director and opportunity to give legislative updates.
- Lastly, we have placed fliers distributed by the CDC informing the population about signs, symptoms and proper precautions for COVID-19 in several areas of the FBO.

Example 3 – FBO Operation (Handling)

- All employees must take their temperature at their residence before coming to work. If an employee has a temperature above 99.6 degrees Fahrenheit, then they are prohibited from coming to work and must remain at their residence.
- To the greatest extent possible and as equipment becomes available, we will implement a system whereby supervisors must check the temperature of all associates with a forehead thermometer before the employee begins work. If an employee has a temperature above 99.6 degrees Fahrenheit, then they are not permitted to work and must be sent home immediately.
- All associates must wear a company provided mask or cloth face covering whenever in public and whenever performing job duties in the presence of others.
- Gatherings during meals or breaks are prohibited;
- Associates must keep a 6 foot distance between people at all times, unless the work being performed requires multiple individuals for the safety of the employees.
- Associates must wash their hands for at least twenty (20) seconds before beginning work, before any food preparation, before and after the use of shared items, after any meal or restroom breaks, and immediately prior to the end of the work shift.
- Any member of the Core 4 Team may be called upon to answer any questions or concerns you may have regarding this policy.
- This policy will be reviewed and revised as necessary to ensure compliance with County, State and Federal Mandates.

If you develop **emergency warning signs** for COVID-19. DO NOT come to work. Seek **medical attention immediately**. Emergency warning signs include*:

- Difficulty breathing or shortness of breath
- Persistent pain or pressure in the chest
- New confusion or inability to arouse
- Bluish lips or face

*This list is not all inclusive. Please consult your medical provider for any other symptoms that are severe or concerning.
https://www.cdc.gov/coronavirus/2019-ncov/index.html

Example 4 – FBO Operation (Handling)

Personal Hygiene
Basic measures, such as the following, should be reinforced and people should be encouraged to practice these measures to minimize potential infectious disease transmission:

- Cover nose and mouth when sneezing and coughing (preferably with a disposable single-use tissue or into bend of elbow). Immediately dispose of used tissues.
- Keep hands away from the mucous membranes of the eyes, mouth and nose.
- Practice frequent hand washing with soap and water at least 20 seconds each time.
- Use alcohol-based hand sanitizers or an antiseptic hand wash.
- Hand washing should be done after coughing, sneezing, handling used tissues, or touching objects, materials or hard surfaces that may have been contaminated by others.
- Communicate hand and personal hygiene to all employees on every shift and visitors.
- Avoid touching contaminated surfaces.

Social Distancing
Social distancing refers to strategies to reduce the frequency of contact between people. Generally, it refers to mass gatherings, but the same strategies can be used inside and outside the workplace. Social distancing strategies include:

- Associates should try to maintain six feet (6' or 2 meters) distance to minimize transmission of infections.
- Where feasible, split teams or tasks into different work locations and minimize face-to-face interaction between divided groups.
- Avoid two occupants in a truck cab at a time, when possible.
- Do not enter aircraft.
- Use telephone, video conferencing and the internet to conduct business as much as possible – even when participants are in the same building. This applies to work with customers, as well as internal business.
- If a face-to-face meeting is unavoidable, choose a large meeting room (to allow more space between participants), minimize meeting time and avoid personal contact such as handshaking.
- All travel must be pre-approved by the C.O.O.
- Consider cancelling or postponing meetings, gatherings, workshops and training sessions.
- Stagger lunchtimes so the number of people in the lunchroom is reduced.
- Do not unnecessarily congregate in operational areas such as line operations rooms or break areas.
- Avoid sharing drinking cups or utensils.
- Limit the number of passengers in a van. Request passengers sit in the back row of the vehicle.

Handling Aircraft with Known or Presumed Positive Passengers

-
- Operator must notify GM in advance of planned arrival.
- Ensure at the time of approval, crew and passengers will not need access to the facility.
- If no notification or arrangements have been approved prior to arrival, the aircraft cannot be serviced until authorization is received and aircraft is cleared by the Local Health Department.
- Communicate via radio with flight crew.

- Direct aircraft to park in remote staging area. Chock the aircraft and leave the immediate area.
- DO NOT interact with crew or occupants.
- Follow local Airport Authority guidelines and notification.
- Non-sterile disposable patient examination gloves, which are used for routine patient care in healthcare settings, are appropriate for the handling or baggage with suspected or confirmed infections.
- Under NO circumstances should an associate enter the aircraft cabin.
- https://www.cdc.gov/coronavirus/2019-ncov/hcp/healthcare-supply-ppe.html

Fingerprint Based Time Clocks

- GM should ensure cleaning wipes are available at all timeclock/card locations and the finger print reader is cleaned before and after each use.

Catering: Ice and Coffee Service, Refreshment Centre

- Wear rubber gloves when working with food items around the FBO.
- Preparing catering that requires touching of food, preparing ice or coffee service.
- DO NOT offer cookies, snacks and cups in lobby.

Modified Operations and Shifts

- All bases should isolate shifts and core four to ensure operational resilience should a contamination event occur.
- Set up stanchions, tables or other means of providing a 6' foot separation at the front counter.
- Print the credit authorization forms (with location specific information) and place on a table.
- The table should also include; cup holder labeled with clean/used pens (pens should be disinfected before reuse), hand sanitizer and the iPad (an extension cord is needed for this).
- Employees should keep badges with them in the event they are stopped in roadblocks etc.
- We have provided a letter to GM's to give employees for the purpose of documenting "essential service" provider.
- If under a shelter in place order, base should go to minimum staffing.

Dust Masks and Face Covers

Comfort vs Protection
If properly worn, dust masks and face covers can be an effective method of protecting others against viruses that you may carry. They are not designed to protect you from contracting illness. Maintaining social distancing, washing and disinfecting your hands will provide the highest level of protection against virus transmission

Voluntary Dust Mask or Face Cover Use
We do not require the use of dust masks or facial covers. If an associate chooses to wear one, the associate must wear one as provided by the company; or if not provided by the company, said mask or facial cover will be pre-approved for usage by the facility's general manager.

A dust mask or face cover that is used improperly or becomes contaminated can become a hazard.

Example 4 – Air Operator

Our team is constantly monitoring global COVID guidance so the company can properly provide the right guidance for the employee in that respective area. This allows us to take care of our employees and the organization's reputation.

The group responsible for creating the two documents is our COVID-19 team which consists of a flight attendant, pilot, mechanic, and lead ground support person. They research various resources and recommend to Flight Department Management what we should have on this list of expectations.

We have a bi-weekly 30-minute WebEx meeting where all supervisors call in and report on the well-being of their direct reports. We review any changes or updates to our two documents or other important company news our VP wants us to know.

Although we currently have zero flights scheduled due to an organization wide zero travel restriction all staff remain in full employment, technicians and fight crews remain in currency. The company is planning on a slow methodical well-planned return to work.

Example 5 - Catering

FOOD HANDLING SAFETY NEWS: COVID-19

Wash, Rinse, Sanitize, and Disinfect in General Aviation Operations

by Paula Kraft, DaVinci Inflight Training Institute & John Detloff, Air Culinaire Worldwide

We want to thank all of you for the questions during the NBAA Webinar April 7, 2020, and for the emails that followed. Over the next couple of weeks, John and I will answer as many of the questions posted during the webinar. As a follow up, we are focusing first on cleaning, sanitizing, and disinfecting in order to respond to the vast number of questions and requests for this type of additional information.

This pandemic has currently caused a shortage of cleaning and sanitizing supplies throughout the world. Many of the supplies are going to hospitals, restaurants, and catering companies to insure public health. A common question is, "what should I use to clean and sanitize?" John and I have provided the CDC a list of approved sanitizing chemicals that can be used to kill the virus, and other bacteria, in our resource link at the end of this article.

We are all in this storm together. We hope this information will successfully answer some of your additional questions. Please look for more information on food safety for business aviation as John and I address more of your questions and food safety related topics. - *Paula*

Proper Techniques for Cleaning, Sanitizing, and Disinfecting

Each of the three featured procedures vary in purpose and must be used in proper order, to be most effective.

CLEANING

Cleaning is simply removing debris, dust, and any foreign matter from a surface. Cleaning is done by using hot water and soap to remove the dirt, soil and food off the surface. You must clean before you sanitize anything. Technically speaking, you can clean something without it being sanitized, but not the other way around.

What needs to be cleaned?

- Refrigerators at the hanger, FBO, break-room, and at home. Cleaning and organizing the refrigeration unit should occur when there is debris, drips, or old food remnants. If the refrigerator is used frequently, cleaning should take place on daily basis.

- Ice machines in the hanger, FBO, and offices should be cleaned and sanitized at least once every six months for efficient operation. First, you must perform a cleaning procedure to remove lime, scale, and mineral deposits; followed by the sanitizing procedure to disinfect the unit and remove algae, slime, and mold spores. Pay special attention to mold around the gasket seal, and inside the door. Make sure the ice scoop is hanging on the outside in a ventilated wire holder and that the barrel of the scoop is facing down to drain residual water off the scoop. The ice scoop should never be stored inside the ice machine, and the scoop end should never be touched by a bare hand. Under no circumstance should the ice machine be used to chill food or beverages.

- Dishwasher detergents are designed for cleaning, but they do very little in the way of truly “cleaning” your appliances. Little bits of food, soap scum, and grease will cling together, build up, and become the ideal breeding ground for various microorganisms. Your dishwasher should be cleaned regularly around the drain basket where food debris catches and does not go down the drain or into a disposal (if applicable). If your dishwasher has a filter, remove it and throw away anything trapped inside. A lot of old food remnants can hide in there. It can also become a veritable breeding ground for old food residue, grease, and all other disgusting stuff. Just because the dishwasher ran, DOES NOT mean it is clean of food debris and is sanitized.

A side note about dishwashers: In commercial establishments, when using a commercial dish machine, most dish cleaning solutions contain Hydrogen Peroxide and other chemicals to sanitize everything that goes through the machine. These chemicals, when used properly, are safe for food service areas. Many caterers also use food contact service wipes as well throughout the kitchen and are also great for galley areas as well. When you hand off your dishes to the handler/FBO to be cleaned, you assume that their dishwashers are cleaning and sanitizing your equipment. Many of the industrial dishwashers are also high temp machines in which a water heater booster brings the water up to 170°F/77°C to sanitize the equipment. Many home dishwashers, flight department, and FBO dishwashers do not generally sanitize … they clean. Regular dish detergent does not have sanitizing chemicals in them, and those that do, will most likely be washed away before the rinse cycle. There are some new home machines that sanitize, but they only bring the water temperature up to 150°F/65.5°C with a heating coil. Most newer dishwashers that have a sanitizing feature use an extended hot-water rinse to kill germs. The National Sanitation Foundation has set a standard called, NSF/ANSI Standard 184, which means that dishwashers bearing this certification kill 99.99% of bacteria when operated on the "sanitize" setting.

- Your counter tops and other surfaces at the hangar, onboard the aircraft, everywhere else. Think of ‘touch points’ such as; counters, faucets, drawer pulls, and cabin pressure points such as; window shades, control panels, seat belts, tables, chairs, the lavatory and galley. FBO food areas and home kitchens should be cleaned daily at the very least, followed by a sanitizing procedure. Look for fingerprints on touch panels,

nesting, and conference tables, credenzas and all other contact surfaces like handles. Clean and sanitize by moving your cleaning motion outward from the dirty touch points. Only use cleaning and sanitizing supplies are aircraft approved by OEM's as they may damage and/or fog the interior finishes of the aircraft.

- Your galley/kitchen sink and other equipment. Your sink can be a cesspool of bacteria, virus, and parasites. It is a breeding ground that is often overlooked. A great way to bring a stainless sink back to life is placing vinegar-soaked paper towels over the interior surface and allow it to sit for several hours, if possible. This will pull old residue out of the fine brush marks and "used scratches" back to the natural stainless. The FBO's that have popcorn machines, microwaves, cookie ovens, accessory pans, and coffee stations for clients should consider cleaning and sanitizing these areas and equipment as well. Refrigerators and microwave handles are also hot spots that require regular cleaning and sanitizing.

Note: Another often overlooked item is your cutting board. Studies show that 200 times more fecal bacteria lives on the average cutting board than on the top of the toilet seat.

- The facility coffee pots: Each time you use your coffeemaker, you should wash and rinse the pot and filter. This will help remove any bacteria that may build up in the coffee pot and will ensure that your coffee tastes fresh. Clean out the water reservoir and the spout where the coffee comes out. You should break down, clean, and decalcify the entire coffee maker every three months or more often if used frequently.

Note: The coffee pot handle in a shared kitchen was the most commonly contaminated site as reported in a study by University of Arizona.

- Now, let's talk sponges … and cloth dish towels. ICK! (for lack of a more technical term.) About 15% of kitchen sponges contain bacteria — like Salmonella and E. Coli. How often should you clean and sanitize your sponges in the kitchen sink? Every day or at least every other day. One way to disinfect a kitchen sponge is to heat it in the microwave but be sure to do it safely, and never microwave a sponge containing metal! While most germs can only survive about 30 seconds in the microwave, you'll need to nuke your kitchen sponge for two minutes at full power to eliminate E. Coli. However, a recent study found that the strongest and worst bacteria might survive the nuking. Instead, you could run the sponge through the washing machine at the hottest setting using detergent and bleach, or better yet, replace it weekly or use it in a less germ-sensitive place, like the bathroom. The unfortunate news about the kitchen or galley dish towel is that a new study suggests your dish towels are crawling with bacteria which can potentially cause food poisoning and other foodborne illnesses. Researchers from the University of Mauritius cultured 100 multi-use kitchen towels after one month of use, without washing. They found that nearly half of them tested positive for bacterial growth — most of which originated from human intestines. Of the

49 samples that tested positive, 36.7% grew coliform bacteria, 36.7% grew Enterococcus, and 14.3% grew Staphylococcus aureus (S. aureus).

Note: If you must use a multi-use dish towel, start by swapping your towels on a daily basis. The absence of pathogens from single-use towels suggests that proper hygiene practices could play a huge role in preventing the growth of harmful bacteria.

- Linens - As far as linens and bedding go, Amanda Kraft, co-owner of Airware has this to say, "You should avoid shaking out the laundry, whether it's jet bedding, pillows, blankets, linen napkins, table runners, and even placemats as it can spread the virus through the air. One of the best things you can do to protect yourself is to wear rubber gloves when handling soiled laundry." Many of us want to use Oxygen-based bleaches such as OxiClean, Clorox 2, and OXOBrite. However, they do not provide disinfectant qualities when used in the laundry processes. It has been proven that the extreme temperatures of steam pressing clothes will kill germs, allergens, and bacteria whenever linens and bedding are professionally cleaned/dry cleaned. The high heat steaming procedures dry cleaners use are the safest way to get rid of nasty bacteria from all your fabrics. This process doesn't just kill sickness-related germs but also successfully attacks odor-causing bacteria and allergens.

Note: If laundering at the hangar or at home do the laundry frequently. Remember most viruses can live on clothing and fabrics up to three days. Read the label and wash using the highest heat recommended to achieve the best disinfecting results. Running the drying cycle for at least 28 minutes is also an effective way to kill viruses.

Try using one (or all) of these household products for a strong and effective sanitation for your laundry:

- Bleach – Add ½ cup once the wash cycle has started. You should use color-safe bleach for any dyed fabrics, and chlorine bleach for white bedding and linens; BUT READ THE CARE INSTRUCTIONS FIRST
- Hydrogen Peroxide – Unlike chlorine bleach, hydrogen peroxide is safe for most fabrics and dyes. Add 1 cup of this antiseptic oxidizer to your wash. Note: you should still spot test to make sure it doesn't cause discoloration.
- Borax – Add ½ cup to your wash. Borax does all kinds of good things for your laundry. It increases stain-removal, neutralizes odors, and disinfects extremely well.

SANITIZING vs DISINFECTING vs STERILIZING

The process begins with cleaning, which must be done first. If you do not remove the dirt first and you sanitize, it will give the surface bacteria a chance to grow on areas where a virus can live.

According to the CDC, sanitizing is generally a little gentler than disinfecting. While sanitizing refers to lowering the number of germs to a safe level by either cleaning or disinfecting, disinfecting itself refers to killing nearly 100% of germs on surfaces or objects. Simply put, sanitizing is the removal of most contaminants that grow bacteria which will affect your health. Disinfecting is eliminating the invisible microorganisms that are harmful to someone's health.

Sterilizing, on the other hand, is the complete destruction of all microorganisms from a surface. Disinfection and sterilization are both decontamination processes. While disinfection is the process of eliminating or reducing harmful microorganisms, sterilization is the process of killing all microorganisms.

Most foodservice facilities use a variety of sanitizing chemicals that are safe for food production equipment and services. The most common is Quaternary Ammonium (Quats) and is used in kitchen sanitizing buckets and other areas throughout the kitchen. The negative side of this product is that it must air dry on the surface when applied. There are some other products that are both approved by the Environmental Protection Agency (EPA) and the Food and Drug Administration (FDA). Generally, the FDA regulates and approves products that are applied to the skin. The EPA regulates and approves products for use in our homes, offices, working environment. According to Annie Balshi, CEO of B.E. Princess, "our new line of antimicrobial products, is an FDA-cleared product that uses the identical Hypochlorous chemistry, certified by EPA to kill COVID-19." So, even though the labels are FDA approved, they are identical to what the EPA says kills 99.9% of germs on hard surfaces. Annie also states, "on March 3, 2020 this product was placed on the EPA's list of approved disinfectants to kill the novel coronavirus, Covid-19. Hypochlorous (HOCL) is a powerful antimicrobial agent occurring naturally in our body and is produced within our white blood cells to combat infection. Because of its germ-killing strength and unique safety profile, it is the perfect weapon against germs on surfaces and skin. The company has developed Hypochlorous for everyday use. We have increased our inventory of all these products, as well as any other items needed during this pandemic." B.E. Princess offers their products, under two labels: EPA Surface Disinfection and FDA Skin Cleansing.

Note: Using a proper food safe sanitizing, or any sanitizing agent, you must follow the instruction as each has listed what type of surface it can used on and the contact time it requires to be effective. To sanitize, you must take the appropriate steps to ensure that you have the proper contact time for it to work. The majority of sanitizing agents need to air dry after use. You should never dry the items with a dish cloth.

DON'T BE A SCIENTIST AT HOME

Too many of us think we are scientists and will mix bleach and water, alcohol and water, or worse mixing other items you are not familiar with. Avoid mixing bleach or alcohol with other liquids as many of these concoctions are potentially dangerous. This is a huge risk factor as too much of an ingredient like this can cause a chemical contamination, get someone really sick, and even kill them.

We have heard from some people, while at home, have used a mixture of bleach and water for sanitizing by mixing a cup of bleach in a bottle and adding water. Technically, the correct amount is 4 tsp per quart of water. Again, this type of mixture is very dangerous and should only be used as a last resort. Also, this solution must be wiped off after use or you may cause a chemical reaction.

NEVER BE A SCIENTIST ON YOUR AIRCRAFT

When we teach food safety classes, we always recommend using items that are made for what you are cleaning and sanitizing. NEVER be a chemist when sanitizing your aircraft! “Items such as rubbing alcohol and bleach are included in the 49 CFR 175 regulations for Hazardous Materials and Dangerous Goods. There are basically three generalized categories that the nine main Hazmat classifications for air transport fall under; those that are accepted, forbidden, or restricted (with proper amount/quantity and containment). Although rubbing alcohol is allowed, bleach is forbidden,” says Scott Arnold, trainDAVINCI Subject Matter Expert.

Yes, bleach may be great for cleaning your bathroom at home but not for an aircraft. Using bleach can become a maintenance nightmare if used in your aircraft’s lavatory. The main concern about utilizing chlorine bleach is the potential to cause damage to seals and (if equipped) the vacuum system itself by way of stripping the protective layer(s) of these items. In addition, if chlorine bleach is mixed with your lavatory’s "blue juice," not only could you be filling your cabin with toxic fumes, but you could be mixing two oxidizing agents – very dangerous!

Rubbing alcohol can be purchased pre-diluted and needs to be at least at 70%. This solution is extremely flammable and although it’s in the “allowed” category of hazmat for air transport, it’s not recommended for sanitizing.

All of the cleaning and sanitizing supplies we use should be food safe. Reach out to aviation suppliers such as; B.E. Princess and Airware, or ask an aircraft detailing company who specializing in cleaning and sanitizing for guidance.

As discussed on the NBAA webinar (recorded link shared below), try to find the proper sanitizing chemicals that are food safe.