



Space Aviation Medicine & Engineering Creative Solutions (SAMECSPlus), Bangalore

Appendix 'B'

Post Lockdown Operational Aviation Medicine Guidelines for those working in Civil Aviation Sector under threat from Novel Coronavirus Disease 2019 (COVID 19) : Document (Pankaj 2020 V1 created on 16th April 2020)

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Suggested measures to be taken to make Tayaltech Breath-Analyzer equipment safe from Novel Coronavirus Disease 2019 (COVID 19)

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Introduction:

Novel Coronavirus Disease 2019 (COVID 19) has challenged us, in alcohol testing domain, for the first time in the world. Together, the issues are complex, as Breath Alcohol (BA) Testing is related to the fitness of crew taking the flight, safety of flying passengers and cargo in civil aviation operations and the COVID 19 virus exposure relates to the safety of all personnel involved in execution of the operations. The office of Director General Civil Aviation (DGCA), India, stands in this case, more as a judge, rather than, in its usual regulatory role, to balance, both the opposing concerns, of passengers on one side and crew on the other and yet be fair to both. Since both concerns involves safety issues that may range from mild sickness to death of human beings, the matter is serious and requires lot of wisdom amongst the decision makers and the stakeholders.

Corona (COVID 19)

Enough material is available to make everyone reasonably knowledgeable about the Agent, Reservoir, Mode of transmission, Incubation Period, Communicability Period, Host, Diagnosis, Prevention and Control through Isolation, Notification, Disinfection, Contacts, Attendants; Non-availability of Immunisation,

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Sample Collection Protocol, Possible Treatment Protocols etc. The personal protection measures based on the state risk levels are also well defined.

The role of air conditioning in recirculation of air at airports, aircrafts, hotels etc. is not known to many. It is worth the opportunity for DGCA to take random samples from exit filters of airports and aircrafts to get an idea, if corona virus survived and got blocked by the filters and stayed there. Negative results will raise the confidence levels to some extent .

Well known Vulnerability to Airborne Infections despite all precautions

Except for a complete lock down, no process is truly protective due to its scale. For better comprehension of the enormity of the issue, it is worth noting the mechanism of Airborne Infections in general, as it is relevant not only in the use of BA Equipment, but also to the whole lifestyle of aircrew, cabin crew, engineers, ground handlers, ATC personnel, airport staff and travelling public.

Airborne and droplet infection are those, which enter the human body through the respiratory passage. The exit of the virus is the throat or the nose of the person who is suffering from the disease or is a carrier. Such a person throws out the virus through coughing, sneezing, spitting, laughing, shouting or loud talking. On a lighter note, we are world famous for above virtues.

Spread of airborne infection as relevant to BA Testing, as to flying itself

All the ways of spread are well known and talked about. Imagine few more ways it spreads that is so relevant for our crew:

- Infection can be transmitted indirectly, through use of infected cutlery, crockery, glasses and cups in hotels and eating outlets, canteens, schools, airports, cockpits etc.
- Through fomites i.e. pillows, blankets, napkins, common towels, or through children using each other's articles like pencils or toys
- Dry sweeping of living and sleeping rooms or hospital wards, shaking of blankets can carry infections between the occupants.
- Still remotely droplet infection can get transmitted through food.
- A patient suffering from viral disease has greater range of infectivity, even when breathing quietly as virus being small can cling to a minute droplet and can be carried with the air current further away.

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The point is that cabin crew will get exposed, much more due to inevitable mingling with the travelling passengers, in semi closed environment for hours, compared to cockpit crew. Service of food to cockpit crew by cabin crew be avoided. During the high-risk period it is worth discussing the reduction in inflight services to bare minimum. The crew strength can also be reduced to bare minimum for safe in- flight operations.

Also, the enormity of exposure shows that BA process, by itself is very small, compared to other risks of catching infection, for those involved in flying as a daily profession. However, this also justifies sincere review of processes that are being followed presently, while doing BA Tests and the dedication of controlling staff to keep the process as safe as possible. Medical staff should be fully aware to reduce the risks to themselves, as well for those whom they are testing. Any shortcut in processes will cause a breakdown. Complete removal of medical staff should be considered, as the BA Testing can be conducted independently without any interaction with crew, by stand-alone system, as being done by Nepal Airlines through the Tayaltech Kiosk installed at Kathmandu. The same has been shown to ICAO regulators during their periodic inspection.

Tyaltech 's ALCLAIR Kiosk is a Fuel Cell Sensor based Aviation Grade Alco meter mounted on Kiosk with biometrics, real time photo/video recording, print out/download capabilities. Tayaltech 's ALCLAIR is an IoT based system that controls the authentication of the authorized person. Multiple IoT devices are integrated, to interact with external control units and with the database. Server can be connected to the device over the LAN/WAN network, where the web-based application is used to view and control the data in the server.

Breath Alcohol Testing

The BA testing, ranging from hundred percent checks to random checks of identified critical human components, related to flying, has been a hallmark of excellent processs, that has been set by DGCA, for the first time in the world. Our process is appreciated well, across the world. The mainstay of the process is to instill full confidence in the travelling public, airlines, regulators, small operators, flying schools, court and industry stakeholders in that, all the aircrew and cabin crew are alcohol free and fit to take the flight, at the embarkation airport, during

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flight and at disembarkation airports for domestic as well as international flights. This major safety process should not be stopped in any way, least we go back to the era of being open to questioning the fitness state of Cockpit and Cabin Crew by media or anyone else after every incidence, accident or near misses.

If flying stops, all processes will stop, including BA Testing, but till the flying is on, no compromise with safety is possible. Stopping the BA Testing process alone with Corona as a risk, will leave the system vulnerable to rebound drinking, in those who in any case are not safety conscious; once they come to know that the checks have gone. The wiser way to deal with the situation is to make the existing processes strict and machines safer.

The existing BA testing processes have been set for good reasons, evolving over many years through CARs and advisories prepared and issued by DGCA from time to time.

Recent temporary suspension of BA Testing in Kerala by DGCA

There are obviously, some good reasons for taking such a positive step by DGCA. This also is a subtle recognition by DGCA, of the extreme vulnerability of our brave cockpit, cabin, ground crew and those who work across the globe in line of their duty. It's a tribute to all including those in management and regulatory positions, for having seen the Corona Issue with the national perspective, in the interest of Indians and India. This also is an opportunity to relook at how we do BA Testing in India. One unknown Corona positive case can infect whole set of crews, passengers etc. even without the BA testing. The risk of cross infection increases with the way we do the BA tests in India. (No privacy, multiple use of mouthpieces, non-standard systems, Machine Crew direct interphase) Obviously, during Non-Corona phase also the aviators are as vulnerable, to lesser viral or non-viral infections that they come across while on duty as they are now to COVID 19.

BA Testing therefore should be relooked by quickly changing to better, more safe procedures. Present processes should be completely done away with, not only during Corona virus phase but otherwise too.

History and initial logic of BA Testing in India

This part of the paper is very relevant to BA Testing as Tayaltech would like to be a partner in upgrading safety with changing times for the good of civil

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aviation. In India the BA testing on random basis was introduced by Pilot's body of then, Air India International, itself, as at that time for any "aviation incidence" their fitness status was questioned, first internally, then in courts. Hence this internal check within airline's Ops & Safety department was introduced. Slowly the system was taken up by Regulatory Body, in our case by DGCA, for a good reason for in those days, drinking and smoking habits were on the lifestyle high.

Today, things have changed in society, as well as in aviation. Commerce has for the moment, more involved with Ops & Safety, again for a good reason, to keep the airline afloat, against severe competition. Earlier there was hardly any competition to the monopoly of Air India's dominance.

Today, drugs abuse has got added on to alcohol abuse, for the Safety Department to deal with. DGCA, as a progressive body has recognized this issue and is coming out with related CAR shortly, in which DGCA Trained Team would do random Testing for drug abuse, partly based on the experience of FAA, under US laws.

On the contrary the onus of BA Testing, historically, has always been with the airlines and small operators. Ideally, as with Drug Testing, this should also be done by the Regulatory Body.

Measures to be taken to make Tayal Tech Breath-analyzer equipment safe from Coronavirus

The Cockpit Crew, the Cabin Crew and the Doctors/Paramedics in aviation duties, should be considered high risk individuals. The personal Protection levels and disinfection levels around their work environments, should therefore be upgraded to appropriate levels, compared to travelling public. With these and other appropriate measures in place the recommendations are made for safer BA Testing by Tayaltech Machines. New machines are recommended commensurating with safety upgrades, expected for Corona Virus Phase or otherwise too, to remain safer than now, even when the threat levels are downgraded.

The logic is to delink direct contact of subject with the machine and mouth pieces, thus minimising the chances of cross infection to the extent possible.

- If Tayaltech handheld instruments or Tayaltech wall mounted machines are used, they should be used only in passive mode and not on active mode. This

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will not involve the use of mouthpieces. If negative the subject proceeds to his workplace. Only if found positive in passive mode, the test should be raised to active mode through use of newly introduced Tayaltech Breath Collection Bags in view of Corona Virus threat.

- BA Testing should be done by collecting the individual breath samples in Tayaltech Breath collecting bag. The sample with crew identity is handed over to the medical staff through a window etc. The identity tagged sample is passed through a Tayaltech calibrated machine centrally, away from crew. The medical/safety staff with necessary precautions can do the testing immediately (During Corona virus phase or otherwise). Tayaltech new machines can be provided and demonstration arranged for DGCA.
- Tayaltech Smart Kiosk machines without doctors or paramedics, as installed by Tayaltech at Kathmandu airport for Nepal Airlines may make sense for our airlines too. These can be customised with various features as required by Regulators or by airlines including No touch, Hands Free operation. Buddha Airlines is also in the process of installing,
- Later if felt appropriate random sampling test by trained DGCA/ Regulatory Testing Team can be done and not by the airlines. (Random Breath, Urine, Hair samples should be taken for testing not only alcohol but other drugs too, by Authorised Government Agency)
- Along with above measure airlines/operators/flying schools should be allowed to test their crew on their own by a passive screening method to ensure that their airlines are safe and if found positive be permitted to take necessary internal action, ideally without any scrutiny by any outside agency except by their own Safety Department. After all the larger interest is in not allowing any crew to take up flying duties under influence of alcohol. Safety department can be accountable if crew is found positive in random sampling.
- Smaller operators or individuals should be tested randomly by Govt agencies & not by operators.

Tayaltech Machines and Sample Collection Bags and other accessories.

Tayaltech Team is open to customise their old and new machines and accessories, any way felt appropriate by the stakeholders. The comprehensive options available for use of Tayaltech Breathalysers in civil aviation domain,

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including introduction of special product developed by Tayaltech (ALCLAIR Hands Free Kiosk, where doctor or paramedics are not required, No Touch alcohol Screening Machine, Breath Air Collection bags to delink pilot with breathalyser machine, ALCLAIR wall mounted Device for testing safely Breath Air Bag samples etc.) for use during Novel Coronavirus Disease 2019 (COVID 19) like situation today or in future are ready for demonstration. It will be an honor to partner with civil aviation stakeholders and regulators as our products, software, backup services, Technical support is made within India.

References:

1. Relevant DGCA CARs and Manuals
2. Manual of Health for Armed Forces 2003
3. IATA Medical Manual 6th Edition
4. Personal Notes and communications

Contact point for further information. Feel free to connect with

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