

Captain Michael Gitt Papers - The Airline Pilot (ALPA Newsletter), 1949-1964

Extracted on Mar-29-2024 05:30:12

The Smithsonian Institution thanks all digital volunteers that transcribed and reviewed this material. Your work enriches Smithsonian collections, making them available to anyone with an interest in using them.

The Smithsonian Institution (the "Smithsonian") provides the content on this website (transcription.si.edu), other Smithsonian websites, and third-party sites on which it maintains a presence ("SI Websites") in support of its mission for the "increase and diffusion of knowledge." The Smithsonian invites visitors to use its online content for personal, educational and other non-commercial purposes. By using this website, you accept and agree to abide by the following terms.

- If sharing the material in personal and educational contexts, please cite the Smithsonian National Air and Space Museum Archives as source of the content and the project title as provided at the top of the document. Include the accession number or collection name; when possible, link to the Smithsonian National Air and Space Museum Archives website.
- If you wish to use this material in a for-profit publication, exhibition, or online project, please contact Smithsonian National Air and Space Museum Archives or transcribe@si.edu

For more information on this project and related material, contact the Smithsonian National Air and Space Museum Archives. See this project and other collections in the Smithsonian Transcription Center.

[[picture in the upper left corner]]

CAPTAIN JAMES A. FURR, author of this paper, is shown representing ALPA during a flight recorder tape readout at the National Bureau of Standards. Seated in the picture are John Pahl and Edward Patton of the CAB. Captain Furr has represented ALPA at several of the tape readout sessions following accidents and is the Association's most experienced representative in the analysis of flight recorder data. The special equipment required fro this work is evident in the photo.

[[three columns of text]]

other, they are displaced from each other so as not to be in vertical alignment. This arrangement presents a problem when trying to look at two different traces and determine what was happening on one, and simultaneously what was happening on the other.

The next problem is to try to find the exact distance these styli are displaced from each other. The manufacturers' standard is known, but when tapes are installed and removed, apparently the styli are shifted and do vary in relation to each other. This is important as a change of 25 ten thousandths of an inch is the equivalent of one second in time. Since most accidents require the time to be accurate to the second, it becomes obvious this displacement should be known and accounted for. Sometimes we can findfrom the accident tape, a point on some previous flight where the recorder was turned off, then re-energized. At this point, usually all styli will make a mark. The space between these marks can be measured thus giving the distance they are displaced from each other. After the tape has been checked for stylus displacement the actual reading of the various parameters can begin. Altitude is usually picked as a beginning trace to read. This is because it is the easiest to follow back from impact. The altitude trace is usually followed back to some altitude where teh flight was operating normally to start the readout. If too much of the flight is read out it is not only time consuming but by having an extended plot there is a comparable loss of detail in the final moments. Likely this is the area in which you have the most interest.

In reading a trace, it is followed under the microscope and any significant change is taken as a data point. Each data point taken is actually two values. The "X" which is how far the foil has advanced and is later converted to time; and the "Y" being the vertical measurement from the reference line. These data points are taken at each significant change right up to and maybe a few points beyond impact. After the raw data points have been taken for each parameter, they are ready to convert them to useable values. These are altitude in feet, indicated aispeed in knots--vertical acceleration in "G"s and heading in magnetic degrees. One of the corrections which must be applied to the raw data in one tape recorder is arc correction. The altitude and airspeed styli are mounted on a pivot so as to scribe an arc when traveling their full range. As values of altitude and arispeed vary, corrections must be applied to compensate for arcs, effectively making the travelof the styli a straight vertical line. Next, the aforementioned stylus displacement correction must be applied to all styli to mathematically reposition them as if they had been recording in a straight vertical line.

On recorders which have the scirbing styli on a straight line and have no arc or stylus displacement corrections, a readout can be accomplished in less time. Finding a point in time to commence is the next process. Since you have previously determined the amount of time in seconds which is represented by a given movement of the foil in thousands of an inch, you next take the "X" data points and find how many seconds (or minutes) each data point has advanced from the starting point. You now



CAPIAIN JAMES A. FURR, outbor of this pager, is shown representing AIPA during a flight exporter large resultant at the National Surges; of Storolarchis Seated in the platton on a lithin Polit and sharmed failured in the CAR. Caption four hors represented AIPA at several of the tage readout variation following occidents and is the Auspecticies in read regarderized in the condition of flight executive data. The special equipment required for finis work is evident into plattice.

other, they are displaned from each other so as not to be in vertical digenest. This arrangement presents a problem when trying to look at two different traces and deterpline what was happening on one, and sirultaneously what was happening on the other.

The next problem is to try to flast the exist distance these styll and displaced flows each other. The massfacturer's standard is known, but when the paper of the paper of the styll are stalled and so vary in relation to each other. This is important as a charge of 23 for these sealers of one inch is the expension of the second it is e. Since next accident separate the time to be accurate to the second, it becames obvious this displacement should be known and necessarily for the sealers of the styll are the accident tape, a point on some provious flight where the coorder was turned of, then re-energied. At this point, usually all sight will make a point on some provious flight where the corridor was turned of, then re-energied. At this point, usually all sight will make a make the special tape of the proving the sinchance they used these giving the distance they

are displaced from each other. After the tape has been checked for stylus displacement the actual reading of the various parameters can begin.

Altitude is usually picked as a beginning trace to seed. This is because it is the excitent in follow back there largest. The abitude trace is usually followed back to scene elittude where the flight was operally arrangly to start the resident. If so surch of the flight was operally as set only time consuming but by besing an extended plat there is a companyable see of detail in the first moneyeas. Likely this is the arm in which you have the most intreest.

In reading a trace, it is followed under the microscope and any sigrificance change is taken as a data point. Each data point taken is actually two values. The "X" which is have far the fed has advanced and is later converted to time, and the "Y" being the vertical measurement from the reference line. Those data points are taken at each significant change right up to and maybe a few noints become firmer. After the raw data points have been taken for each parameter, they are ready for the convection tacture, recessing its convent them to usefulle value. These are altitude in best, indicated alropsed in knots—vertical acceleration in "G"s and heading in magnetic figures. One of the convetions which must be optical to the are data in one laps recorder is are convection. The altitudes and adopted styll use meanted on a pivot to as to critic as and when transleigh their full range. As values of altitudes and arispend vary, conveniens must be applied to compensate for soc, effectively making the inneed of the scyll a straight vertical line. Next, the absortentialness of altitudes and convenience and styles displacement convertion must be applied to all styll to mathematically reposition them as if they had been recording in a simight vertical line.

On recorders which have the scribing styli on a straight line and have no are or stylus displacement corolished in less time. Finding a point in time to commence is the next mores. Since was have previously determined the amount of time in seconds which is represented by a given movement of the foil in thousands of an inch, you next take the "X" data points and find how many seconds (or minutes) each data peint has advanced from the starting point. You now must make up a callbration chart from which the "Y" values or the distance that is measured from the reference line up to the trace you are mading in theusands of an inch, can be transposed into actual values of altitude, airspeed, "G" forces and heading.

About The Author

Capatin James A, Farr, Entre on Air Lines, has participated in money condited incentigations as a representation of ALPA. Coptroli Pair is presently ALPA's Region III Sofety Chairmen and I Control Sofety Chairmen for Entrem. He is a member of EAL Control 1547 and Alms in Palis Charles, Vigilia.

THE AR LANG PRIOR

must make up a calibration chart from which the "Y" values or the distance that is measured from the reference line up to the trace you are reading in the thousands of an inch, can be transposed into actual values of altitude, airspeed, "G" forces and heading.

[[box in the right bottom corner]]
About The Author
Captain Jamse A. Furr, Eastern Air Lines, has partecipated in many accident investigations as a representative of ALPA. Captain Furr is presently ALPA's Region III Safety Chairman and is Central Safety Chairman for Eastern. He is a member of EAL Council #142 and lives in Falls Church, Virginia.
[[/box in the right bottom corner]]

PAGE 6 THE AIR LINE PILOT

> Captain Michael Gitt Papers - The Airline Pilot (ALPA Newsletter), 1949-1964 Transcribed and Reviewed by Digital Volunteers Extracted Mar-29-2024 05:30:12



Smithsonian Institution

Smithsonian National Air and Space Museum Archives

The mission of the Smithsonian is the increase and diffusion of knowledge - shaping the future by preserving our heritage, discovering new knowledge, and sharing our resources with the world. Founded in 1846, the Smithsonian is the world's largest museum and research complex, consisting of 19 museums and galleries, the National Zoological Park, and nine research facilities. Become an active part of our mission through the Transcription Center. Together, we are discovering secrets hidden deep inside our collections that illuminate our history and our world.

Join us!

The Transcription Center: https://transcription.si.edu
On Facebook: https://www.facebook.com/SmithsonianTranscriptionCenter

On Twitter: @TranscribeSI

Connect with the Smithsonian Smithsonian Institution: www.si.edu

On Facebook: https://www.facebook.com/Smithsonian

On Twitter: @smithsonian