

Virtual Flight Data Monitoring (VFDM)

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What is Virtual Flight Data Monitoring?

– Two Part Definition

- Creating simulated, quasi-realistic flight data based upon probabilistic and modeled flight behavior
- Analyzing the virtual data using flight data analysis tools
 - Data can be stand-alone or aggregated with actual data



Why would we want to use “virtual” data as part of an FDM program?

- Helps overcome traditional FDM implementation barriers
 - Liability
 - Equipment/Infrastructure Costs
- Provides data within General Aviation where none or little would exist otherwise (or we could wait many, many years)



Who, within General Aviation, could participate in an FDM program in the next year?

- Many “holes”
- For the purposes of GA, ability to institute FDM seems to rely on infrastructure and operational resources



General Aviation Taxonomy for the Purposes of FDM

Structure Level	High	Medium	Independent
Command	<ol style="list-style-type: none"> Multiple Members of Management Clearly Delineated Management Roles defined 	<ol style="list-style-type: none"> One or two members of management Can be determined Management Roles may not be strictly defined 	One (or a few) person operation
Procedures	<ol style="list-style-type: none"> Written Reviewed Practiced 	Written	May be written or spoken
Safety Structure	<ol style="list-style-type: none"> Independent Policy-making Capacity SMS practices 	Little to non-existent	Non-existent



How would we create simulated data?

– Some possibilities:

- Off-the-shelf simulation software
- Modification of current simulation technology
- Creation of stand-alone simulation program dedicated to flight data generation



Would simulated data be as reliable as actual data?

- No, not with current technology
- We plan efficacy studies to compare actual versus simulated data
- Would still be much better than no data (“filling the holes”)



What are the goals of a VFDM program?

- Same as an FDM
 - Identify accident precursors
 - Trend analysis
 - Triggers
- Help to bring the benefits of FDM to the masses



Someday...

...FDM augmented with VFDM could provide:

- Risk assessment tool
 - Per flight basis
 - Rulemaking
 - Insurance
- FDM analysis to the masses
 - Creation of a protected server
 - Creation of a robust, user-friendly Structured Query Language (SQL) interface



Questions? Comments?

AVIATION DEPARTMENT

