



Review of Current Status/Agenda

R. Bruce Thompson

Status

- Consortium planning meeting in Austin, TX
 - November 18 & 19, 2003
- First MAPOD WG meeting in Albuquerque, NM
 - September 23 & 24, 2004 (ATA NDT Forum)
- Sub-team meeting in Las Vegas, NV
 - November 17, 2004 (ASNT Annual Meeting)
- Second MAPOD WG meeting in Palm Springs, CA
 - February 4, 2005 (Aging Aircraft 2005)
- Third MAPOD WG meeting in Orlando, FL
 - June 9-10, 2005 (AeroMat 2005)
- Fourth MAPOD WG meeting in Orlando, FL
 - September 22-23, 2005 (ATA NDT Forum)
- Fifth MAPOD WG meeting in Atlanta, GA
 - March 9-10, 2006 (Aging Aircraft 2006)
- Sixth MAPOD WG meeting in Ft. Worth, Texas
 - October 19, 2007 (ATA NDT Forum)

Metric

The Model-Assisted POD Working Group will be considered a success if, during its duration, activities under a variety of programs lead to

- Draft protocols for model-assisted POD
- Draft requirements for model qualification for use in POD determination
- Model-assisted POD demonstrations

Prospectus

- General Objective:
 - To promote the increased understanding, development and implementation of model-assisted POD methodologies.

Approach

The working group will meet periodically and conduct the following activities:

- Discuss strategies for model-assisted POD determination
- Discuss requirements for models to be used in POD studies
- Identify gaps that need to be addressed between state of the art models and real world problems
- Provide input regarding examples of specific problems that would demonstrate the utility of model-assisted POD activities
- Communicate the results of model-assisted POD demonstrations



FIRST MAPOD MEETING

September 23-24, 2004

ATA NDT Forum, Albuquerque, NM

Results of First MAPOD Meeting

- Immediate objective adopted to codify methods that are less cost/time intensive than 1823
- Two approaches identified
 - FMA
 - XFN
- Example of FMA approach demonstration given
 - UT inspection of engines (P&W)
- Web site established



SECOND MAPOD MEETING

February 4, 2005

Aging Aircraft 2005, Palm Springs, CA

Results of Second MAPOD Meeting

- Elements to be included in MAPOD protocol discussed
 - Reference to uses of simulations in broader context
- Example of XFN approach demonstrated given
 - EC inspection of engines (cracks vs notches – P&W)
- Discussion of role of models in discussion crack versus notch response
- Statistical approach to model development suggested



THIRD MAPOD MEETING

June 9-10, 2005

AeroMat 2005, Orlando, FL

Results of Third MAPOD Meeting

- 1823 update process reviewed and MAPOD Working Group invited to provide input
- Draft documents presented indicating steps to implement XFN and FMA approaches
- AF NDI POD study reviewed
- Use of Sandia/AANC fatigue crack samples in a demonstration discussed
- POD data accessible at UDRI reviewed
- Status report given on reviews of
 - Empirical POD studies
 - Model-based POD studies



FOURTH MAPOD MEETING

September 22-23, 2005

ATA NDT Forum, Orlando, FL

Results of Fourth MAPOD Meeting

- Status update on international programs
 - Canada: EC in structures
 - Australia: UT in structures
- Detailed discussions of modifications of 1823 needed to codify XFN and FMA approaches
- Continued discussion of FAA load and fatigue studies
- Discussion of possible demonstration programs
 - Request for white papers from Malas



FIFTH MAPOD MEETING

March 9-10, 2006

Aging Aircraft 2006, Atlanta, GA

Result of Fifth MAPOD Meeting

- Update on technical programs in EC MAPOD
- Group discussion of white paper for a demonstration program
- Status update on international programs
 - Canada: EC in structures
 - Australia: UT in structures



SIXTH MAPOD MEETING

October 19, 2006

ATA NDT Forum, Fort Worth, TX

Result of Sixth MAPOD Meeting

- Information rather than a working meeting
- POD needs of the attendees assessed
- Minutes under preparation



SEVENTH MAPOD MEETING

October 26-27, 2006

ASNT FALL CONF, HOUSTON, TX

Focus of Seventh MAPOD Meeting

- Detailed discussion of issues related to transfer functions for cracks versus notches
- Review of scope of MAPOD Demonstration Program
- Status update on ongoing programs
 - Canada: EC in structures
 - New Intergraph effort
 - Update of Mil Hndbk 1823
 - NDE Reliability Monographs

AGENDA
Model-Assisted POD Working Group Meeting
Sequel to the ASNT Fall Conference
October 26, 2006
Houston, Texas

Thursday, October 26, 2006 – Room 330A, George R. Brown Convention Center

Background

1:00 p.m.	Review of Current Status/Agenda	B. Thompson, CNDE
-----------	---------------------------------	-------------------

Discussion on Issues Related to Transfer Functions/Cracks Versus Notches

1:15	Summary of Literature	J. Knopp, AFRL
------	-----------------------	----------------

1:45	Listing of Factors that Control Transfer Function	B. Thompson, CNDE
------	---	-------------------

2:15	Identification of Open Questions	B. Thompson, CNDE
------	----------------------------------	-------------------

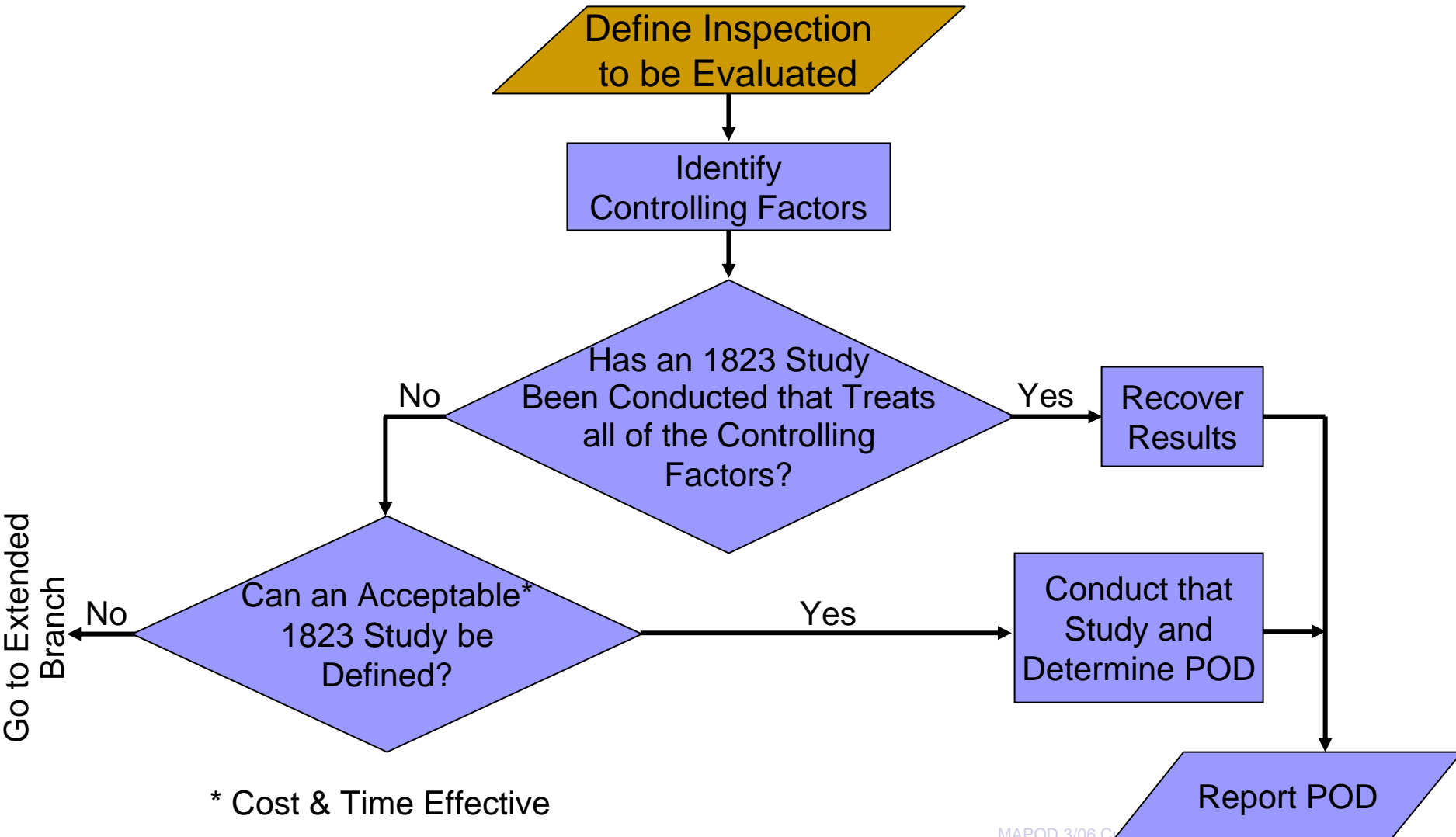
2:45	Plan for Experiment to Resolve Open Issues in the Context of Demonstration Program	D. Forsyth, TRI
------	--	-----------------

5:00	<i>ADJOURN</i>	
------	-----------------------	--

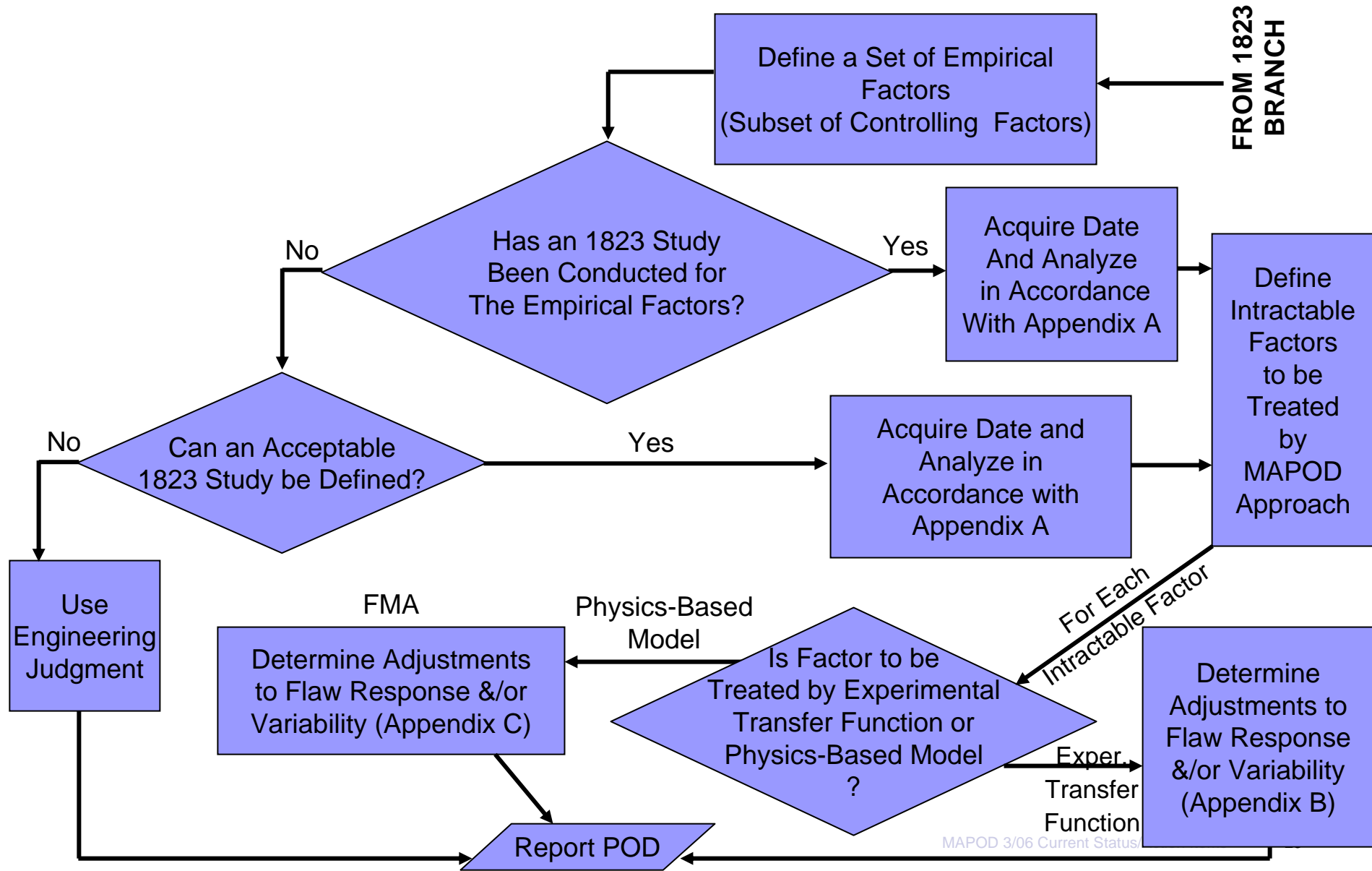
Friday, October 27, 2006 – Humble Room, Courtyard Houston Downtown

<i>Demonstration Programs</i>		
8:00 a.m.	Objectives and Review of Scope for MAPOD Demonstration Programs	D. Forsyth, TRI/ P. Swindell, FAA/ D. Gallela, FAA/ E. Lindgren, AFRL/ J. Malas, AFRL
<i>Update and Discussion on Significant Efforts</i>		
10:30	Update of NRC-DND POD Project	M. Khan, NRC
10:50	Introduction to Intergraph	
11:00	Update of Mil Handbook 1823	J. Knopp, AFRL/ C. Annis, Statistical Engineering, Inc.
11:15	NDE Reliability Monographs	J. Malas, AFRL
11:30	Next Steps and Emerging Opportunities	B. Thompson, CNDE
12:00 p.m.	<i>ADJOURN</i>	

Direct Empirical (1823) Branch



Extended Branch



Definitions

■ Appendices

- It is assumed that the main body of the 1823 update would describe how to do a purely empirical POD study
- Appendix A: How to extract information from empirical study in a way in which it can be combined with MAPOD inputs
- Appendix B: How to combine this information with transfer function experiments to determine POD
- Appendix C: How to combine this information with physics-based model information to determine POD

Definitions

■ Factors

□ Controlling factors:

- All aspects of situation that influence POD

COMPONENT

Geometry

Material

Microstructure

FLAW

Location

Type

Size range of interest

INSPECTION

Equipment

Procedure

Personnel

Accessibility of component

□ Empirical factors:

- Subset of controlling factors for which an acceptable empirical determination of POD has or can be determined

Definitions

- Intractable factors:
 - Controlling factors not treated or readily treatable in an empirical determination of POD; those factors that remain to be treated by other means