Status of Cytec 5215, Cytec 5250-4, and Hexcel 8552 Qualifications

- We have compiled the list of companies that will participate in the panel fabrications/equivalencies
  - If you want to participate, it’s still not too late. Just let Yeow know.
- Cytec, Hexcel & ACG know how much prepreg material to make
- Prepreg will be shipped in 1-5 months – specific dates will be announced later
- Resin/product form specific test plans are being created based on the Generic Test Plan that was reviewed by NCAMP members
- For each resin/product form, there will be
  - one qualification test plan
  - one equivalency test plan
    - Multiple equivalency test plans will be created from it
- Material specifications are being created
Generic Test Plan for Film Adhesive / Prepreg Cocure Compatibility

• Objective: Create a test plan that will interrogate the ability of a film adhesive and a composite prepreg to be cocured using a common cure cycle

• Investigate both chemical and rheological compatibility, verify via microscopic and mechanical evaluation

• Status:
  – Basic plan structure has been established
  – Chemical compatibility section still needs to be worked
  – Cure rate and rheological test section nearly complete
  – Procedures for fabricating a cocure panel and performing microscopic and mechanical verification testing have been drafted

• If you have experience in this area and would like to participate in reviewing or writing the draft generic test plan, please let us know
Advanced Composites Group
NCAMP’s First Qualification

Kristin Strole, Program Manager;
Coordinator, NCAMP
NCAMP’s first qualification program is with ACG’s 3K Plain Weave G30-500 fabric

- FAA conformity and test setup and test witnessing done at NIAR – Approximately 35% done with test witnessing and 45% done with conformity and testing is 95% complete on the following test methods and conditions:
  - Warp Tensile Properties CTD & RTD
  - Fill Tensile Properties RTD
  - Short Beam Shear
  - Warp Compression RTD
  - Fill Compression RTD
  - Laminate Short Beam Shear RTD
  - Open Hole Tension Properties 1 CTD and Properties 2 RTD
  - Fill Hole Tensile Properties 1, 2, 3, RTD

- ACG equivalency and qualification will occur separately, but for Cytec and Hexcel, equivalency and qualification will be held concurrently.
Should NCAMP qualify RTM and VARTM systems?

Some work needs to be done before we can start qualifying RTM & VARTM material systems
We’ll Need Generic Test Plans for RTM and VARTM Systems

• How different is RTM/VARTM from prepreg?
  – What factors to consider?
    • Resin/hardener mixing ratios?
  – What should be defined?
    • Flow media, port spacing, etc.?

• Very detailed process specification may be needed (partner with a RTM/VARTM expert part fabricator?)

• How do we handle reinforcement forms that are popular with RTM/VARTM such as braids and stitched plies?
How Should We Select Materials?

• Unlike prepreg systems, material users typically select fiber, resin, weaver/braider, tackifier, etc.
  – The combination along with process specification is qualified as a material system
  – Very few material suppliers can supply the entire material system
  – A few material suppliers have to form a team to supply the entire material system

• Like prepreg systems, material users still want multiple product forms (reinforcement forms) for each resin system

• A few possible approaches to selecting materials:
  – Option 1: Select resins then ask resin suppliers to find team members based on input from NCAMP members (prepreg model) then perform some screening tests to find best combinations
  – Option 2: Select resins, fiber, weaver/braider, tackifiers separately then perform some screening tests to find best combinations
  – Option 3: Let Yeow know your suggestions