DARWIN 5.0 Production Release Notes

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Summary of Enhancements

The DARWIN 5.0 production release includes the following enhancements and new features:

- Support for Mission Mixing

  - Capability to define missions. The User has full control over order in which missions are analyzed in the Mission Mix

  - Capability to define stress and temperature multipliers for application to a baseline load step

- Initial 3D Capabilities for Surface Damage mode

  - Capability to import and extract stresses from 3D finite element models

- Redesigned and expanded Surface Damage analysis mode

  - Additional K-solutions for off-set surface and corner cracks at holes: SC15, SC18, CC08

  - Improved surface crack in plate solution (SC02)

  - Enhanced parallelism between Surface Damage and Inherent analysis modes

    o Support for multiple stress profiles in Surface Damage analysis mode

    o For 1D surface damage analysis, the User now provides actual stress profile values instead of gradient values (similar to Inherent analysis mode)

    o The user interface is very similar for all analysis modes

- New DARWIN Configuration file

- Electronic Help System Enhancements

Additional Notes

- Outstanding Issues and Known Limitations

- Minimum and Recommended hardware requirements

Enhancements and New Features in DARWIN 5.0

Support for Mission Mixing

In DARWIN 5.0 the mission is built from a series of load steps (individual mission blocks) and passed directly to Flight_Life. The user has full control over the order in which the mission blocks are assembled.

Capability to Define Stress and Temperature Multipliers

In both Inherent and Surface Damage Mode, new load steps can be created by specifying stress and temperature scaling factors for application to a baseline load step. This avoids the need to create a stress neutral file (*.UOF) for each load step.

New DARWIN Configuration File: darwin.cfg

A new DARWIN configuration file was added to allow definition of OEM-specific parameters. This file resides in the `$DARWIN/bin/$platform`-directory.

Electronic Help System Enhancements

The electronic help system was enhanced for the 5.0 DARWIN release. It now includes the entire contents of the User's Guide, and is displayed in a new web browser window. The User's Guide was also revised and now includes content identical to the electronic help system.

Outstanding Issues and Known Limitations

- The 3D analysis mode is currently limited to finite element models consisting of 8 node brick elements

- Stress values used for the weight function solutions are based on a polynomial fit of the finite element stress results

Hardware Requirements for 3D analysis mode

3D GUI operations require additional computational and video resources as shown in the Tables below. These requirements do not apply to 1D Surface Damage and 2D Inherent analysis modes.

Minimum Computational Requirements for 3D analysis mode

Operating System	CPU	Memory	Video System
Windows 2000 Red Hat 8.0 Linux	Intel Pentium 4 @ 1 GHz AMD Athlon @ 1 GHz	512 KB	nVidia GeForce2 Ti - 64 MB ATI Radeon - 64 MB

Recommended Computer Configuration for 3D analysis mode

Operating System	CPU	Memory	Video System
Windows XP Red Hat 8.0 Linux	Intel Pentium 4 @ 2.5 GHz AMD Athlon @ 2.5 GHz	> 1 GB	nVidia GeForce2 Ti4400 - 128 MB nVidia Quadro4 750 XGL - 128 MB ATI Radeon 9700 Pro - 128 MB ATI Fire GL X1 - 128 MB