

## **RESUME STEPHEN (STEVE) HALL**

### **SUMMARY:**

Steve Hall has over 30 years experience in solving aerospace engineering design, analysis and test problems for both metal and composite structures. He has strong business, technical management and presentation background and is often used in a trouble-shooting role to isolate and resolve engineering, aging aircraft, aircraft certification, computer-related and manufacturing problems. Steve has considerable technical project management experience at both the national and international level having managed international projects related to composite structures and aircraft battle damage repair for the Canadian Forces, the Royal Australian Air Force (RAAF) and the United States Navy (USN). He is comfortable making presentations to either technical/operational personnel or senior management personnel and has presented numerous papers on a variety of engineering topics at international conferences as well as chaired many technical sessions.

Steve has worked in both the structural analysis and test environments in Industry and Government. He has been responsible for the definition, program management, implementation and/or technical management of R&D programs since 1980 and over the past four to five years has been involved with structural health and certification issues related to special mission and aging aircraft systems for aircraft operating in the aerial firefighting, geophysical survey and other low-level roles. Other projects he has undertaken encompass Aircraft Accident Investigation, Structural Health Monitoring Programs, metal and composite structural analysis using both finite element and closed form solutions, and fatigue and fracture mechanics analysis. Steve has strong computer skills in both technical and office software and has gained considerable experience with implementing and managing scientific and technical programs over the Internet, particularly where large quantities of data are involved. He has made numerous technical and management presentations on these topics at both national and international levels.

Recent activities include:

- Analysis of research being carried out under the auspices of the NASA Aircraft Aging and Durability (AAD) Program and the development of a Technology Transition Program to facilitate the successful transition of the research to end-user applications;
- Development of a Test and Evaluation Master Plan (TEMP) Overview for the USCG HH-65 Rotary Wing Aircraft
- Definition of a proposal for developing an assessment of aggressive Homeland Security Missions on the USCG HH-60 Rotary Wing Aircraft;
- Analysis of Homeland Security structural loads data obtained from a USCG HH-65 Aircraft
- Overseeing the development and implementation of Structural Health Management Programs on aerial fire fighting and other low-level aircraft for Sandia National Laboratories, the FAA and Aerial Firefighting Operators,
- Developing Strategic Management Plans, including Economic Rationale for evaluating aircraft for use in Special Mission Roles;
- Overseeing the implementation of a secure Web Based Project/Document Management system to facilitate execution of inter-divisional and/or inter-company collaborative projects
- Liaising with regulatory authorities such as the FAA to develop Alternate Means of Compliance for regulatory compliance of special mission aircraft;
- Responding to concerns related to pending Widespread Fatigue Damage legislation and its economic impact on the future viability of aging aircraft
- Managing the development of a complex post aircraft accident analysis tool;
- Overseeing the development of remote monitoring software for use over the Internet;
- Defining structural systems for the analysis and monitoring of aircraft health and corrosion parameters over the Internet;
- Defining how the use of Internet technologies can be used to manage technical information within a multi-divisional International Aerospace company;

- Authoring two definitive papers on low level loads and their structural (durability and damage tolerance) implications for the National Research Council of Canada and the U.S. Federal Aviation Administration.

## **EXPERIENCE**

### **2005-Present    COMMAND DECISIONS SYSTEMS AND SOLUTIONS (CDS<sup>2</sup>).**

In collaboration with CDS<sup>2</sup>, Steve has worked as a Senior Technical Aerospace Specialist with CDS<sup>2</sup> on a number of projects, primarily related to evaluating the impact of changes in roles on predominantly aging aircraft systems. In this capacity he has fulfilled the roles of a technical resource and trouble-shooter for programs related to the NASA AAD program, the change in role of aging aircraft such as the USCG HH-60 Jayhawk and HH-65 Dolphin to address aggressive Homeland Security roles. He was also the primary author/developer of a Test and Evaluation Master Plan approach document for the HH-65 to evaluate the impact of more aggressive homeland security roles on aging aircraft. Steve also participated in the trouble-shooting and analysis of USCG flight data and assisted in the specification of flight test programs for the HH-65 aircraft. On behalf of CDS<sup>2</sup>, Steve also made submissions to an FAA working Group on Rotary Wing Health Monitoring issues.

### **1992-Present    CELERIS AEROSPACE CANADA INC.**

Steve is the President and one of the two founding shareholders of Celeris Aerospace Canada Inc. In addition to overseeing the day-to-day running and management of the company, Steve is responsible for the preparation of proposals, marketing and all technical aspects of the company's work. This includes the design and implementation of aircraft accident investigation methods, aircraft structural health monitoring programs, composite structure design and repair and fatigue and damage tolerance analysis. Other important aspects of Steve's work include overseeing the development of integrated engineering/informatics solutions to address client problems and acting in a technical trouble shooting/project management role for a variety of clients.

### **1990-1992    S&S SOFTWARE LTD., AEROSPACE DIVISION**

As Manager of the Aerospace Division, Steve was responsible for all technical aspects of the division's work. Projects completed included evaluations of CF single and multi-channel OLM programs, a study of the engineering, operational and computational implications of database structure suitable for fleet-wide Individual Aircraft Tracking (IAT) programs, investigations into the use of computers to synthesize structural failure information from Aircraft Cockpit Area Microphone (CAM) recorders, the independent validation and verification of technical documentation for the CC-130 Hercules OLM program, participation in the CC-130 proposal evaluation team, and co-ordinating and assessing multi-channel monitoring OLM monitoring requirements for aircraft such as the CT-133 (T-Bird), the CC-144 (Challenger) and the CC-138 (Twin Otter).

Steve was also been appointed Canadian Deputy Program Manager for the International CF-18 Composite Repair Engineering Development Program and Deputy Program Manager for the CF Aircraft Battle Damage Repair (ABDR) program. In these roles, he is responsible for advising and providing the CF with evaluations of all technical activities, recommending future issues that should be addressed and participating in national and international meetings as a technical advisor.

**1984-1990      INSTITUTE FOR AEROSPACE RESEARCH (IAR) NATIONAL RESEARCH COUNCIL OF CANADA**

As a Research Officer, Steve had responsibility for the technical management and software development of the Aircraft Operational LOADS Monitoring Programs and for the design and coding of the NAE Composite Design Analysis System (DAS). He acted as a consultant to DND, Transport Canada and a variety of Canadian companies on structural analysis related problems including: LOADS data analysis, fatigue and damage tolerance of structures, composite/metal and composite/composite repair, the PILP composite wing and the Composite Repair Engineering Development Program (CREDP). He served as a member of the ASTM E-49 Committee on the Computerization of Materials Databases, as a member of the AERONET Networking Committee and as an International Advisory Member for the CADCOMP (Computer Aided Design for Composite Materials) series of Conferences. Prior to leaving IAR, Steve was task leader for the Manoeuvre Signature Identification Test of the CF-18 full-scale test, which involved characterizing individual manoeuvres from recorded flight parameters.

During his time at IAR, Steve published papers on many technical and computing issues. He presented papers at a number of International Conferences such as Canadian Aerospace of Structures Institute (CASI) and the International Conference on Composite Materials (ICCS V). He has also given lectures on a variety of computer/structures issues at the USAF Composite Optimization Workshop, to the Snowbirds, Canadian Forces pilots and to senior CF personnel.

Throughout his time at IAR Steve was responsible for the supervision of a number of guest-workers, Bachelor's and Masters Co-op students.

**1981-1984      CANADAIR LTD., Montreal, Canada**

Steve worked as a Structural Analyst for the Composite Materials group and as an engineer for the Military Aircraft Division. During this time he gained considerable experience with MSC/NASTRAN (Static & Non-Linear Analysis) as applied to Composite and Metal Structures. He was responsible for the development and implementation of an experimental and analytical program to explore the use of composite patches for repairing metal aircraft structure. This involved the application of finite element methods and damage tolerance concepts. To accomplish these tasks, Steve made extensive use of his knowledge of FORTRAN.

**1979-1981      ROLLS-ROYCE AERO ENGINES LTD., Derby, England**

Steve worked in the Stress Office as a Structural Analyst and was involved with the interfacing of RB211 Nacelle Structures to wide-body airframes. As well as stressing composite and metal aircraft parts, he was required to develop a research program that explored the use of bolted composite flanges. During this time, he developed a Composite Structural Analysis Program.

**1978-1979      MARSHALL'S OF CAMBRIDGE (AERO Division)**

Steve worked as a Structural Analyst and participated in the stressing of missile structures and components for the British Aerospace 146. During this time, he gained experience with scientific programming on programmable calculators.

**1976-1978      OTHER EXPERIENCE**

Steve served a technical apprenticeship as part of his Engineering Degree with Westland Helicopters Ltd (1975-78). He spent time with the Work Analysis Group, the Instrumentation Calibration Group, and Production Management and in the Aircraft Design Office. Westland Helicopters put a project developed by himself and two colleagues into production.

**EDUCATION**

- 1978 B.Sc. (Hons), Aeronautical Engineering from the Hatfield Polytechnic, London, England. Specialties, Mathematics and Aircraft Structures. Other relevant topics: Aircraft Design, Aircraft Stability and Control, Aerodynamics Aircraft Materials, Aerospace Propulsion.
- 1978 Technical Apprenticeship from Westland Helicopters that was also recognized by the Engineering Industrial Training Board, (EITB), London, England.

**PROFESSIONAL DEVELOPMENT**

- 1997 FAA Functions and Requirements Leading to Airworthiness Approval. Engineering Short Course, University of Kansas, USA, and October 28-30 1997.
- 1991 NATO/AGARD Seminar on Buckling of Composite Structures, 3 days, Ottawa.
- 1991 NATO/AGARD 72nd Meeting of the Structures and Materials Panel, Specialists Meeting on Fatigue Management and Workshop on the Integrated Design, Analysis and Optimization of Aircraft Structures, 4 days, Bath, England.
- 1991 Canadian Forces Aircraft Structural Integrity Program (ASIP) Workshop.
- 1990 EMRC NISA II, Statics, Dynamics, Composites and Heat Transfer, 1 week Short Course at the National Research Council, Ottawa.
- 1990 Second International Conference on the Computer Aided Design of Composite Structures (CADComp 90), 3 days, Brussels, Belgium.
- 1989 Fifth International Conference on Composite Structures (ICCS V), 3 days, Paisley, Scotland.
- 1989 USAF Workshop on Optimization of Composite Structures, 1 day, Paisley, Scotland.
- 1988 First International Conference on the Computer Aided Design of Composite Structures (CADComp 88), 3 days, Southampton, England.
- 1988 Advanced Analysis and Design of Composite Materials & Structures, 1 week, UCLA Short Courses, Los Angeles.
- 1987 Fourth International Conference on Composite Structures (ICCS IV), 3 days, Paisley, Scotland.
- 1986 Modal and Dynamic Analysis, 1 week presented by David Ewings.
- 1986 Mechanics of Composite Materials, 1 week UCLA Short Course, Los Angeles.
- 1985 Designing with Advanced Composite Materials, 1 week, Guilford University, England.
- 1983 MSC/NASTRAN Static and Dynamic Analysis, 1 week Schaeffer Analysis, New Hampshire.
- 1983 MSC/NASTRAN Non-Linear Analysis, 3 days, CDC, Montreal.
- 1982 Fracture Analysis and Damage Tolerance of Structures presented by David Broek -1 week, CANADAIR, Montreal.

1979 Application of Microcomputers to Engineering Analysis, Birmingham University, 1 week.

### PROFESSIONAL AFFILIATIONS AND POSITIONS

- ➔ Associate Fellow of the Canadian Aeronautics and Space Institute (AFCASI);
- ➔ Past Chair of the CASI Structures and Materials Section;
- ➔ Member of the CASI Ottawa Branch Executive
- ➔ Past Chair of the Ottawa Carleton Research Institute Tomorrow's Technology Trends (3T) group

### PUBLICATIONS

Steve has presented a number of papers at International Conferences, published papers in several journals and proceedings and authored many publicly available reports. Three recent papers that have obtained International visibility include:

- An Aerial Firefighting Industry White Paper on cost-benefit options related to the use of aerial firefighting aircraft ([http://www.avweb.com/other/STRATEGIC\\_AERIAL\\_FIREFIGHTI.pdf](http://www.avweb.com/other/STRATEGIC_AERIAL_FIREFIGHTI.pdf))
- An paper written for the FAA on Low Level Loads ([www.tc.faa.gov/its/worldpac/techrpt/ar05-35.pdf](http://www.tc.faa.gov/its/worldpac/techrpt/ar05-35.pdf))
- A paper on WFD and alternate means of compliance for Aging Aircraft. This paper was awarded the best paper prize from the Australian 5<sup>th</sup> DSTO International Conference on Health & Usage Monitoring ([http://www.smsystems.com.au/\\_content/documents/559.pdf](http://www.smsystems.com.au/_content/documents/559.pdf))

A full list of publications can be provided upon request.