



François Besnier - 13280 N. 82nd Drive, Peoria, AZ 85381 – francois@besnier.net – (602) 318-7254

EXPERIENCE

PARKER CSD, Irvine, CA, USA

October 2008 – present

System Safety Engineer in Flight Controls – Consultant (telework)

- ♦ Produced the System Safety Analysis (SSA) documentation for the primary flight controls of the Bombardier CSeries (BD500) Fly-By-Wire system.
- ♦ Represented Parker Safety to Bombardier at various system design reviews.
- ♦ Produced the System Safety Analysis (SSA) documentation for the primary flight controls of the Embraer Legacy 450/500 (EMB550) Fly-By-Wire system.
- ♦ Both BD500 and EMB550 Fault Tree Analyses (FTA) were performed using CAFTA, represent about 150 fault trees with more than 3,000 unique basic events / gates, about 5,000 pages of fault trees (when each fault tree is printed individually).
- ♦ Wrote hundreds of system safety requirements for all the components of the FBW system.
- ♦ Coordinate safety activities with the FBW component suppliers:
 - ♦ Flight Control Computer (FCC): Rockwell-Collins for BD500 and BAE Systems for EMB550
 - ♦ Cockpit Controls (side-stick controllers and levers): SKF Aerospace.

HONEYWELL AEROSPACE, Glendale, AZ, USA

February 2005 – present

System Safety Engineer in Avionics and Flight Controls – Consultant (telework)

- ♦ Produced the Fault Tree Analysis (FTA) for the primary flight controls of the Boeing 787 Fly-By-Wire system Flight Control Electronic (FCE), which also comprises the autoflight function.
- ♦ Wrote associated FCE System Safety Analysis (SSA) documentation.
- ♦ Helped writing FCE system safety guidelines and plans.
- ♦ Wrote Preliminary System Safety Analysis (PSSA) on related Honeywell research activities for advanced fault tolerant Fly-By-Wire systems (Digital Flight Control System (DFCS) project with NASA).
- ♦ Wrote System Safety Analysis (SSA) for the Honeywell KSG7200 Air Data Attitude Heading Reference System (ADAHRS) airborne on Dassault F7X and Pilatus PC12 planes.
- ♦ Produced the Pilatus PC12 Preliminary Common Mode Analysis (PCMA) of the Honeywell EPIC Automatic Flight Control System (AFCS).
- ♦ Updated the System Safety Analysis (SSA) previously created for Primus EPIC AFCS and ACAC ARJ21.

SMITHS AEROSPACE (now GE Aviation) @ BOEING, Everett, WA, USA

January 2005 – July 2005

System Safety Engineer for the Boeing 787 Landing Gear Control System

- ♦ Produced the Preliminary System Safety Analyses (PSSA) for the Boeing 787 Brake System and Nose Wheel Steering.

HONEYWELL AEROSPACE, Glendale, AZ, USA**August 2001 – July 2003***System Safety Engineer in Avionics and Flight Controls***February 2004 – January 2005**

- ♦ Responsible for the production of the Preliminary System Safety Analysis for the fly-by-wire controls of the ARJ21 regional jet of China's AVIC I Commercial Aircraft Co. (ACAC).
- ♦ Responsible for the production of certification documentation: System Safety Analyses (SSA) and/or Common Mode Analyses (CMA) on the Primus EPIC AFCS for one helicopter (AgustaWestland AW139) and the following fixed wing aircrafts:
 - Embraer ERJ170/175/190/195,
 - Dornier Do728 (*discontinued*),
 - Gulfstream G500, G550,
 - Dassault Falcon F900EX EASy, F2000 EASy, F7X,
 - Raytheon Hawker 4000 Horizon,
 - Cessna Citation Sovereign.The AFCS is highly integrated and typically provides the following functions: autopilot, flight director, yaw damper, stall warning & stall protection, auto-throttle, pitch autotrim, and Mach trim.
- ♦ Wrote safety documentation to FAA / EASA system safety regulation (FAR/JAR 25.1309), using guidance provided by SAE ARP-4761, and SAE ARP-4754.
- ♦ Derived software and hardware design assurance levels as per RTCA DO-178B and RTCA DO-254 to support design activities.
- ♦ Used Matlab Simulink to analyze control laws and propose design improvements, when required.

BOMBARDIER AEROSPACE, Montréal, Canada**September 2000 - August 2001***System Safety, Reliability and Maintainability Engineer*

- ♦ System Safety Engineer, responsible in charge of the secondary flight controls (Pitch trim / Horizontal Stabilizer, Spoilers, Flaps) and the electrical power generation system for the Continental Business Jet.
- ♦ Responsible for the production or review of the following Safety documentation:
 - Fault Tree Analysis (FTA),
 - System Safety Analysis (SSA),
 - Failure Mode Effect and Criticality Analysis (FMECA),
 - Functional Hazard Analysis (FHA),
 - Fire Hazard Analysis,
- ♦ Involved with Airworthiness Authorities (Transport Canada) regarding the Safety demonstration of Airworthiness as per JAR/FAR Part 25 (essentially § 25.1309) for the above systems.
- ♦ Co-ordinate Safety activities with partners in Europe and in U.S. (Moog, E.C.E, Liebherr).

SEXTANT AVIONIQUE (now THALES), Toronto, Canada**January 1997 - February 2000***Avionics System Safety & Reliability Engineer*

- ♦ Responsible for Safety & Reliability certification of the avionics suite on the Bombardier Aerospace DASH 8Q400 regional Turboprop aircraft (more than 100 LRUs including the following flight controls: Stall Protection System and Autopilot).
- ♦ Negotiated with Bombardier and Transport Canada (TCA) with regard to Safety & Reliability contractual requirements and Safety guidelines.
- ♦ Produced most of the Avionics Safety & Reliability documentation from the preliminary design to the final certification (e.g. system FMECA, Software Safety Level Assessment, Fault Tree Analysis and System Safety Analysis, MMEL consolidation, Dispatch Analysis, etc.).
- ♦ Presented analysis results to the Airworthiness Authorities (Transport Canada) or their representative (DAD).

LIGERON S.A, France

May 1994 – January 1997*

System Safety & Reliability Consultant – Office Manager (Toulouse, France)

Missions performed for LIGERON S.A. in the Aerospace industry

MICROTURBO, Toulouse

- ♦ Developed and produced Safety analysis for the APU328 on the SAAB JAS 39 aircraft (mechanical reliability prediction of turbine blades, fire analysis and Fault Tree Analysis).

TECHNOFAN, Toulouse

- ♦ Responsible for methodological support of statistical methods for failure analysis and MTBUR report (applicable to an air fan used in A320 Airbus).

TURBOMECA, Bordes

- ♦ Resolved technical difficulties of 3D ARBIZON engines of the MILAS missile achieved through a functional approach and systematic specialist interviews.
- ♦ Co-ordinated meetings of missile experts on technical topics, such as software, hardware, fuel hydraulics, mechanics and aerodynamics.
- ♦ Gave advice to the Safety & Reliability Department on how to manage reliability and safety activities in preliminary design phase.

CNES, Toulouse

- ♦ Assisted the Project Manager in evaluating Safety & Reliability analysis for Advanced Gradient Heating Furnace (AGHF) that flew in Space Lab (NASA STS78) in June 1996.
- ♦ Wrote "Presentation de methodes comparatives pour la securisation d'experiences scientifiques" article for the Lambda-Mu10 National Conference held in Saint Malo, France, 1996.
- ♦ Produced technical manual to monitor software reliability during the initial stages of development (technical specifications and design).

ALCATEL ESPACE, Toulouse

- ♦ Responsible for Risk Management analysis and meeting tight deadlines on an ongoing basis regarding telecommunications equipment used for satellite constellation (WorldStar).

* Note that I was employed by LIGERON S.A. from May 1994 to February 1998. I was expatriated by LIGERON S.A. in Toronto from January 1997 to February 1998. I have worked as contract or consultant engineer since then.

Missions performed for LIGERON S.A. in the Railway industry

CSEE TRANSPORT, Les Ulis

- ♦ Developed and produced Safety & Reliability analysis documents for a new electronic speed control device intended for the next European TGV (high-speed train).
- ♦ Developed Safety & Reliability plans to comply with CENELEC regulations.
- ♦ Produced System Safety Analysis (FMECA based on MIL-STD-1629 and Fault Trees).

FAIVELEY TRANSPORT, La Ville aux Dames

- ♦ Produced Safety Analysis on train brake systems (Functional Analysis SADT/SART, Fault Trees).
- ♦ Trained software engineers on techniques and tools to design and validate embedded real-time software for safety critical applications.

RATP, Paris

- ♦ Developed reverse engineering analysis on real-time software (from low-level assembly language to functional analysis).
- ♦ Produced Hazard and Safety analysis on critical embedded software for wheel anti-blocking and anti-skid system embedded on RER A.
- ♦ Designed specific analysis tools for reverse engineering analysis (machine code to specification).

Missions performed for LIGERON S.A. in the other industries

REEL (Nuclear Power), St-Cyr-au-Mont-d'Or

- ♦ Guided Software Quality strategies for safety critical software used on overhead cranes to load or unload fuel assemblies in reactors of EDF 900 MWe nuclear power plants.
- ♦ Trained engineers on Software Quality Assurance.

GEC ALSTHOM BERGERON (Pumping), Fontenay-sous-bois

- ♦ Conducted an availability analysis for a salt water pumping station in Qatar, using Reliability Diagram Blocks.

GLCS-ITECH, Montreuil, France**September 1992 - May 1994***Engineer and Project Manager*

- ♦ Responsible for program and technical management of research projects with advanced laboratories in the field of mechanical, thermal and material sciences for space technology advancement (e.g. ball bearings of ARIANE 4 Vulcain turbo-pump).
- ♦ Liaised with CNES and physicists regarding models, tests, methodology, planning and contracts on various research programs (e.g. GDR CNRS 916, GRT CNES).
- ♦ Developed scientific software for advanced research programs in space mechanics (using C and Fortran).
- ♦ Specified and designed a Windows interface of 3D finite element method (using C/C++ and Visual Basic).
- ♦ Provided mechanical expertise independently, or in collaboration with other experts.

DEC TELECOM ENGINEERING GROUP, New Hampshire, USA**July 1990 - January 1991***Software Engineer*

- ♦ Optimised VAX VMS RDB database for telecommunications purposes.
- ♦ Specified SCP/SMS interface on intelligent networks (e.g. 800 numbers application over SS7).

EDUCATION

Dual “Diploma of Engineer” (considered between B.Sc. and M.Sc.):

Diplome d'Ingenieur Ecole Nationale Superieure des Telecommunications, Paris 1989-1991*Computer Science and Telecommunications Engineering.***Diplome d'Ingenieur Ecole Nationale Superieure d'Arts et Metiers, Paris 1986-1989***Mechanical Engineering. Honor: Silver Medal*

Thesis in 1989: Design and programming of a software tool to store, organize and access technical knowledge (user: CNES, i.e. French National Space Agency).

Thesis in 1988: Electronic design and programming of a multi-processor testing device.

IT SKILLS

- ♦ Worked with various programming languages: Visual C++, Visual Basic, Pascal, Fortran, Assembly language (e.g. Motorola 680x0, Intel 80x86, Nec 7810), Forth, Shell, Perl / Tk, PHP, Prolog, LISP.
- ♦ Main OS known: Windows, Mac OS X, Linux
- ♦ Experienced Web site administration: HTML, IIS, Apache, CGI, Active Server Pages (ASP), Perl, PHP, VB Script, JavaScript, ODBC, socket programming, Internet Security.
- ♦ Database system practised: VMS RDB, Access, MySQL, DBase, SQL.
- ♦ Highly proficient with Microsoft Tools (and VB programming): Word, Excel, Access, Outlook, Project, Exchange.
- ♦ Also highly proficient with other various CAD and engineering tools, such as Finite Element or reliability modeling software (Faultrease, RiskSpectrum, Fault Tree + and CAFTA).
- ♦ Designed and wrote my own fault tree analysis tool which provides original fault tree analysis capabilities

OTHER

- ♦ Languages: Fluent English and French
- ♦ Citizenships: French, Canadian
- ♦ US Permanent resident (Green Card holder)