

## FIRM

Soteria Company, LLC  
2011 - Present

## EDUCATION

- B.Sc. in Math, Physics and Chemistry University of Manitoba, 1957
- System Effectiveness, Air/Ground communications, airport systems, 1965
- Transmission Engineering Principles, Bell Canada course, 1963
- Statistics, Carleton University, Ottawa, Canada, 1965

## AREAS OF EXPERTISE

- System Assurance (Reliability & Maintainability) analyses
- FMECA
- Safety and reliability studies and for producing RAMS sections for specifications.
- RAMS program planning and reliability and maintainability demonstration plans

## YEARS OF EXPERIENCE

45 Years

## EMPLOYMENT

- Parsons, Los Angeles, CA  
2001 - Present
- Deliner Couplers, Charlotte, NC  
1999 - 2014
- Bombardier, Kinston, Ontario, CA  
1992 – 1999
- UTDC / Canadair, Kinston, Ontario, Canada  
1976 - 1992
- Bell Northern Research, Montreal, Quebec, Canada  
1971 - 1976
- Computing Devices of Canada, Ottawa, Ontario, Canada  
1965 - 1971
- Manitoba Telephone System, Winnipeg, Manitoba, Canada  
1965

## TECHNICAL EXPERIENCE

Mr. Keith has over 45 years of experience in systems assurance and over 35 years of experience in the transit industry. His areas of expertise include safety, planning programs, estimating, designing system assurance databases, maintenance planning, and maintenance facility planning. Brian's industry experience includes a focus on communications, aerospace and transit.

## SUMMARY OF EXPERIENCE

Brian's systems assurance experience in the transit industry includes the following projects and activities:

- Senior Safety Specialist, Crenshaw/LAX Transit Corridor Light Rail Project
- Senior Safety Specialist, Exposition Metro Line Construction Authority Light Rail Transit Project, Los Angeles, CA
- Senior Safety and System Assurance Specialist, Goldline Foothill Extension Construction Authority
- System Assurance Manager, Exposition Metro Line Construction Authority
- System Assurance Manager, Pasadena Goldline Construction Authority

## RELEVANT AND RELATED EXPERIENCE WITH SOTERIA

### LAX Automated People Mover Project

October 2017 - Present

The Los Angeles International Airport (LAX) Automated People Mover (APM) is a major component of the Landside Access Modernization Program (LAMP). The APM Project will provide an elevated guideway with an at-grade Maintenance and Storage Facility and six stations, connecting to CTA passenger terminals through a network of elevated pedestrian walkways and a vehicle system. The APM Project also includes procurement of the Bombardier INNOVIA APM vehicle, along with operating systems and infrastructure to support the system.

In the role of subcontractor to LAX Integrated Express Solutions (LINXS), Soteria has an extensive role in ensuring system safety. Among other roles, Soteria is managing the System Safety Program Plan, additional Safety Plans, performing Threat and Vulnerability Assessment, and managing Certification.

**Mr. Keith's Role:** Mr. Keith is providing hazard analysis and safety verification analysis support. He developed the hazard management data base and will maintain it throughout the project duration.

### Metro Crenshaw/LAX Transit Corridor Project

September 2013 - Present

The Metro Crenshaw/LAX Transit Corridor project is an 8.5-mile light rail line that will run between the Expo Line on Exposition Boulevard and the METRO Green Line. Soteria Company is leading the system safety, security and assurance planning, analysis and certification for all phases of the safety and security certification process, through design and construction and startup. Soteria is also responsible for the reliability and maintainability planning, analysis and demonstration program.

**Mr. Keith's Role:** Senior Safety Specialist

Mr. Keith is providing both System Assurance (Reliability & Maintainability) analyses and the system FMECA for this project.

## **Exposition Light Rail Transit Project Phase II, Los Angeles, CA**

2014 - 2015

The Expo II LRT project is approximately 6.6 miles long, extending from Expo LRT Phase I alignment from Culver City to Santa Monica. The Project will have seven stations - two aerial, one elevated, and four at grade.

Soteria Company was responsible for Safety and Security Planning and Analysis for Phase I of this project. They developed the project's System Security Program Plan, System Safety Program Plan and the Safety and Security Certification Plan. Soteria also implemented the safety and security programs from preliminary engineering through construction, including the preparation of Safety Hazard Analysis and a Threat and Vulnerability Assessment (TVA). Soteria Company successfully led the safety/security certification effort and provided technical support at the Fire/Life Safety Committee.

**Mr. Keith's Role:** Senior Safety Specialist

Mr. Keith provided both System Assurance (Reliability & Maintainability) analyses and the FMECAs for this project.

## **ADDITIONAL RELEVANT AND RELATED EXPERIENCE**

### **Parsons, Los Angeles, CA**

Senior Safety and System Assurance Specialist

2001 – Present

#### ***East Side Access (New York MTA)***

Responsible for conducting special safety and reliability studies and for producing RAMS sections for specifications. Developed RAMS requirements for system procurement packages and placed reliability, maintainability, and safety requirements on contractors and suppliers. Reviewed the RAMS sections of bidders' documents and suppliers' submittals for reliability analysis and failure mode, effects, and critically analysis. Certified packages as a member of the safety team.

- Developed the preliminary hazard analyses to initiate the web based hazard log and managed the web based hazard log ensuring that all hazards have appropriate responses
- Safety analysis of the Smoke Evacuation System for the ESA caverns and concourse in the Grand Central Terminal
- Developed specification section for interface requirements for the components of the Smoke Evacuation System for Grand Central Terminal

#### ***Gold Line Foothill Extension Construction Authority***

Mr. Keith was System Assurance Manager and managed contractors and suppliers to obtain reliability, maintainability and safety data. He was responsible for:

- RAMS program planning and management
- Supplier RAMS requirements
- Development of the systems assurance database
- System FMECAs
- System Reliability and Maintainability reports
- System Performance Demonstration plans
- System Performance Demonstration

#### ***Exposition Metro Line Construction Authority, Phase I***

Mr. Keith was System Assurance Manager and managed contractors and suppliers to obtain reliability, maintainability and safety data. He was responsible for:

- RAMS program planning and management
- Supplier RAMS requirements
- Operating systems data retrieval and analysis
- Development of the systems assurance database
- System FMECAs
- System Reliability and Maintainability reports
- Reliability and maintainability demonstration plans

## ***Pasadena Gold Line Construction Authority***

Mr. Keith was System Assurance Manager and managed contractors and suppliers to obtain reliability, maintainability and safety data. He was responsible for:

- RAMS program planning and management
- Supplier RAMS requirements
- Operating systems data retrieval and analysis
- Development of the systems assurance database
- System FMECAs
- System Reliability and Maintainability reports
- Reliability and maintainability demonstration plans

## ***Houston Metro Rail Expansion - Houston Metro***

Mr. Keith was responsible for managing the systems assurance programs, which included program planning, operating systems data retrieval and analysis, development of subsystem/supplier requirements and the systems assurance database using Access, and demonstration methods. He managed contractors and suppliers to obtain reliability and maintainability data necessary for the project. Analyzed operational performance of the axle counter system from operating records, tracking performance of the system.

## ***Dellner Couplers, Charlotte, NC / Falun, Sweden***

Safety/System Assurance Specialist

1999 – 2014

Mr. Keith established a System Assurance discipline for Dellner Couplers, developed a RAMS database, and managed Safety and System Assurance programs for specific projects. The RAMS programs included Hazard Analyses (PHA, SHA, OSHA, and FHA), Detailed FMECAs, Safety Verification Matrices, Fault Trees, Reliability Analyses, Maintainability Analyses, Life Cycle Cost Analysis, and Design for Environment Analysis.

Analyses were provide to car builders including Bombardier, Alstom, Siemens, Kinkishario, Kawasaki, CAF, ROTEM, and Stadler. The operating authorities included WMATA, LACMTA, Boston, Houston, Calgary, Minneapolis, Vancouver, Montreal, Toronto, Sao Paulo, Salt Lake City, Las Vegas, JFK airport, Beijing airport, Attiko (Greece), Kuala Lumpur (Malaysia), Santa Clara, San Diego, Seattle, Phoenix, and Hudson Bergen.

## ***Bombardier, Kinston, Ontario, Canada***

System Assurance/Maintenance Planning Specialist

1992 - 1999

Mr. Keith maintained a database of detailed maintenance cost data from operating companies, maintained contact with operating companies to obtain feedback as to the effectiveness of the facilities and the planning, and performed analysis of inventory records to identify actual costs for comparison to theoretical projections. He also analyzed the operating and maintenance records of the Vancouver SkyTrain to assess the performance of the system and develop performance standards.

## ***Las Vegas Monorail***

Mr. Keith planned the O&M staffing, depot layout, maintenance planning, and spares planning.

## ***JFK Airport System***

Mr. Keith planned the O&M staffing, depot layout, maintenance planning, and spares planning.

## ***UTDC / Canadair, Kinston, Ontario, Canada***

System Assurance Specialist

1976 - 1992

Mr. Keith managed RAMS programs for thee Vancouver SkyTrain systems, the Detroit People Mover system, and the Scarborough Rapid Transit system. His management included the study of other operating systems in order to set baselines. The RAMS programs involved setting subsystem requirements, documentation and reliability performance for both vehicle and wayside subsystems.

Mr. Keith provided maintenance planning for these systems including the conceptual layout and planning for the Vancouver SkyTrain and the Detroit Downtown Peoplemover vehicle storage and maintenance facilities. He managed the reliability demonstration for the Scarborough Rapid Transit vehicle fleet 1986 – 1987, working closely with Toronto Transit personnel and later the Toronto H6 subway fleet. His responsibilities included identifying problem areas and failure mechanisms and assisting in their resolution.

Additionally, Brian worked with TTC personnel in the development of their maintenance data system and computer-aided analysis of maintenance records to determine actual reliability and problem areas. He analyzed the Toronto subway fleet performance, comparing the various types of vehicles.

## **Bell Northern Research, Montreal, Quebec, Canada**

System Analyst

1971 - 1976

Mr. Keith planned and carried out a study of the Bell Canada analog radio toll broadband network maintenance. He analyzed maintenance procedures and maintenance data to determine the need for changes in maintenance procedures and equipment.

## **Computing Devices of Canada, Ottawa, Ontario, Canada**

System Specialist / Supervisor

1965 - 1971

Mr. Keith supervised the development of computer programs for carrying out equipment reliability estimates, maintainability estimates, and diagnostics evaluation. He supervised MIL-STD 785 and 470 system assurance programs and reliability testing in accordance with MIL-STD 781. Projects included 'VAST', Moving Map Display for the A7 aircraft, Head Up Display for the F111B aircraft and the ALSEP project for NASA.

## **Manitoba Telephone System, Winnipeg, Manitoba, Canada**

Engineer Associate

1965

Mr. Keith was responsible for designing trunk cables and toll cables and providing ground rules for the layout of local and rural lines. He wrote a 'Practice' for the design of local and rural cable layouts. Brian troubleshot problems on in-service plant and was responsible for electrical protection and co-ordination.