

# Samuel Hautequest Cardoso, Ph.D.

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## SUMMARY

Talented and accomplished Civil Engineer with extensive international background in aviation, airport, pavement and materials engineering, safety/SSP/SMS. Proven expertise in pavement design, project management, due diligence, design, compliance, research & development, master planning, pavement management systems (PMS), training, materials development, and more. Adept at formulating and/or updating policies, procedures, and technical guidelines. Previous experience as Brazilian Air Force Engineer and civil engineering consultant to airports and government agencies in South America, Latin America, The Caribbean, Europe, Asia, and US. Able to analyse projects and proposals, identify areas for improvement, and achieve multi-million-dollar cost savings. More than 20 years of experience in university instruction. Active member of technical and scientific institutions and Editorial Advisory Panel. Familiar with preparing manuals, technical and business reports, and airport due diligences. Served on multiple industry boards and committees. Excellent problem-solving, research, analysis, and negotiation skills. Multi-lingual in English, Spanish, and Portuguese.

## PROFESSIONAL EXPERIENCE

### **International Civil Aviation Organization (ICAO) – Technical Cooperation Programme** 2009-

- SMS Course, workshop, and OJT for 16 Tocumen Int'l Airport technicians, modernization, and expansion of the current SMS to work as network level, including all five (05) airports administrated by Tocumen S.A., 3.5 months, started in 21 April 2017;
- Pavement evaluation, runways 03L/21R, 03R/21L/taxiway Echo, Tocumen Int'l Airport/impact on safety, Panama, Feb 2016;
- Team Leader for Safety evaluation/Risk Analysis for the construction and operation of the new parallel runway of Jorge Chavez International Airport, (AIJCh) and tunnel impact under the new runway, Callao, Lima, Peru, October/December 2015;
- Consultant for Singapore Civil Aviation Authority (CAAS) during the main audit process of "Changi International Airport, for its re-recertification, focusing on the following areas: evaluation of the organizational structure of CAG (Changi Airport Group), evaluation of movement area (runway safety) and evaluation of Safety Management System (SMS), June/July 2015;
- On the Job Training (OJT) on SMS Implementation & Aerodrome Certification for the basic background of the first thirteen Aerodrome Inspectors of The Bahamas Civil Aviation Authority (Airport Safety and Certification Expert); ICAO SMS course and Workshop on SMS Implementation for aviation industry; Development of the SMS Manual (SMSM) and the Manual of Aerodrome Operations for the Certification of Lynden Pindling Int'l Airport, Nassau, The Bahamas, May-August 2014;
- Consultancy for CAA-Panama for planning an Aerodrome Inspector Course/Airport Certification, October 2012;
- ICAO Airport Master Planning Course Instructor, Bangkok, Thailand, 09-20 July 2012;
- Airport Planning Engineer, member of the DGAC/OFGI Group responsible to review/update the Juan Santamaría International Airport (AISJ) Master Plan, San Jose, Costa Rica, 2010/2011;
- Airport expert for planning, safety evaluation and efficiency of aircraft operations related to the construction of North Terminal of Tocumen International Airport, Panama, 2010;
- Two SMS Implementation presentations for Juan Santamaria International Airport (AIJS) CEO/Directors/Managers and other stakeholders (61 persons), Costa Rica (24-27 May 2010);
- One Week-Course on SMS (17-21 May) and One Week-Workshop on SMS Practical Implementation for twenty-eight DGAC/OFGI/AIJS technicians (24-28 May 2010), San José, Costa Rica, 2010;
- Coordinator/Instructor on SMS for twenty-six employees of INAC, Caracas, Venezuela, 2009;
- Airport Expert for planning, safety evaluation and aircraft operations efficiency related with the construction of the Tocumen Int'l Airport North Finger, Panama City, Panama (2009).
- Provided training (course) on Safety Management Systems for 26 CAA employees, Caracas, Venezuela (2009).

### **Other International Experiences** 2011-

- Member of the ICE Editorial Advisory Panel (Institution of Civil Engineers, UK) Transport Journal Panel, 2012-2018.
- PCI and Pavement Non-Destructive Evaluation (HWD) and Load Capacity Analysis for Runway 10/28, IQS Engineering, Salvador International Airport, Bahia, Brazil, 2018;
- Consultant, Rio de Janeiro Int'l Airport, Aircraft/Pavement Interaction/Safety, Evaluation of historical series of runway friction coefficient and macrotecture at Runways 15/33 and 10/28 (pre-stressed concrete), 2014-;
- Functional & Destructive/Non-destructive Pavement Evaluation, project & design/technical specifications, using "full-depth", and Consultant for the rehabilitation/construction (\$13 million), El Cibao Int'l Airport, Dominican Republic, 2016-2017;
- Evaluation, design, and correction of three deformation basins at Runway 10/28 (pre-stressed concrete), Galeão Int'l Airport, Rio de Janeiro, 2016/2017;
- Aeronautical Studies/Safety for Tancredo Neves Int'l Airport: Runway 16/34 and Parallel Taxiway Separation Distances and Localization of Superficial Drainage System, Confins, Minas Gerais, Brazil, October 2016;
- Airside evaluation and formulation of strategies for pavement rehabilitation and maintenance; initial studies for the conception and implementation of a Pavement Management System (SGP), Tocumen International Airport, Panama, 2016, (ICAO/TCB);

- Pavement Condition Index (PCI) evaluation of runway 03R/21L and parallel taxiway for Tocumen International Airport, Panamá, 2016 (ICAO/TCB);
- Pavement Condition Index (PCI) evaluation for runway 15/33, Galeão International Airport, Rio de Janeiro, 2016/2017/2018;
- PCI Method adaptation for pre-stressed concrete RWY 10/28, Rio de Janeiro Int'l Airport, 2015-2018;
- Runway roughness evaluation and pavement/aircraft interaction of runway 15/33, Galeão International Airport, Rio de Janeiro, 2015/2018;
- Airside evaluation and formulation of strategies for pavement rehabilitation and maintenance; conception and implementation of a Pavement Management System (PMS) for Galeão International Airport, Rio de Janeiro, October 2014;
- Forensic/Evaluation/Recommendations and Execution of Complementary Works on the Asphalt Concrete Overlay Carried Out at Runway 06/24 of Anapolis Air Force Base, Goias, Brazil, EPC Construções Company, November 2014.
- Airside Infrastructure Audit and Pavement Maintenance & Repair strategies formulation & costing for PGI (Infrastructure Management Plan) of Tancredo Neves/Confins Int'l Airport concessionaire up to 2038; Airside Safety Assessment during the period of privatization (up to 2038) and Road Map for safety culture enhancement, airside at an adequate safety level & compliance with the National (ANAC) and International (ICAO) Regulations, CH2M-Hill/Halcrow Group, May/June 2014.
- Establishment of the basis for PMS implementation, Evaluation of the Pavement Condition Index (PCI) and Pavement Classification Number (PCN) for runway, taxiway and aprons of El Cibao Int'l Airport, Santiago de los Caballeros, Dominican Republic, February/May 2014.
- Forensic/Evaluation of the runway 07/25 of V. C. Bird International Airport and investigation of the root causes of a chronic and recurrent pavement distress area, Andrade Gutierrez, Antigua and Barbuda, November/December 2013.
- Airside infrastructure audit and Pavement Maintenance & Repair strategies formulation & costing for bid technical advisory services to the investor up to 2038 (Rio de Janeiro/Galeão International Airport, Due Diligence/Technical Advisory services) for CH2M-Hill/Halcrow Group, London, September/October 2013.
- Implementation of the SMS (SMS Manual – SMSM) and the Manual of Aerodrome Operations for the Certification of Ramón Villeda Morales Int'l Airport, San Pedro Sula and conception of its EOC/EOCS (Emergency Operations Centre/Emergency Operations Centre for Security). Establishment of the basis for InterAirports S. A. Wildlife Program and selection of a Biologist to be in charge of this Program. Pilot Project for implementing SMS at network level and aerodrome certification of three other int'l airports administrated by INTERAIRPORTS S. A., Honduras, February-June 2013.
- Development of a REPEX model and auditing/due diligence of ten Portuguese airports towards their privatization (Vinci – winner proposal), as a Consultant for CH2M-Hill/Halcrow Group, London, November/December 2012.
- Strategic Plan for infrastructure recuperation of Toncontin, San Pedro Sula, La Ceiba and Roatan Int'l airports, in Honduras, toward 2020, INTERAIRPORTS S. A., October/November 2012.
- Revision of the Definitive Engineering Studies for the Rehabilitation of Chiclayo, Piura, and Talara Airports, ADP-Aeropuertos del Peru, July/August 2012.
- Overlay Solution for Tancredo Neves Int'l Airport, Belo Horizonte, Brazil, IQS Engineering, June 2012.
- Hazard/Risk Analysis for the privatization of two int'l airports in Brazil, Halcrow Group, UK/GMR Group, India, 2012.
- Establishment of criteria for acceptance of new slabs with defects of Taxiways “G”, “H”, y “J” and Aprons 1, 2, 3 and 4 related with the construction of the North Finger Terminal of Tocumen Int'l Airport, Panamá City, 2011.
- Evaluation of five international airports (PCI/PCN), Interairports Enterprise, Honduras, 2011.
- Overlay Solution for Teresina Airport Runway, Piauí, Brazil, IQS Engineering, Rio de Janeiro, 2011.

**Applied Research Associates, Inc., ARA, Elkridge Office, MD, USA**

2008 - 2009

**Senior Airport Engineer**

- Wrote Chapters 4 “Cold Recycling Techniques for Asphalt Surfaced Pavements” & 5 “Hot Recycling Techniques for Asphalt Surfaced Pavements”, update of the document “Standard Practice for Pavement Recycling”, Unified Facilities Criteria, UFC 3-250-07, Department of Defence, United States of America (1<sup>st</sup> Draft).
- Proposals and investigation for TRB/ACRP Projects 4-08 - “Improved Models for Risk Assessment of Runway Safety Areas (RSA)” and 4-09 - “Risk Assessment Method to Support Modification of Airfield Separation Standards” (Project Manager).
- Participated on the aeronautical studies for Toronto Int'l Airport (Greater Toronto Airports Authority, Canada).
- Participated on the development of the “Guidebook for Airport Safety Management Systems” for the FAA (TRB/ACRP Project 4-05).

**Dept. of Civil Engineering, University of Maryland, College Park, MD**

1999

**Faculty Research Engineer**

- Developed laboratory and theoretical research for two government-funded projects.
- Investigated pavement materials as part of Superpave Models Project and AASHTO Design Guide Project.
- Created and tested statistical models of pavement materials for principal investigator.

**Samuel H. Cardoso, US / Overseas**

1996 – 2000

**International Consultant, Civil & Paving Engineering**

- Provided services in wide variety of areas, including airport, civil, and materials engineering, as well as ICAO compliance, for companies and government/civil agencies in North, South, and Central America.
- Performed design, budgeting, construction, supervision, inspection, destructive and non-destructive testing, functional and structural evaluation, and more for airfield, highway, and urban pavement proposals.
- Airfield Pavement Expert for ICAO on rehabilitation of runways project for J. Chavez International Airport in Peru. Ensured compliance with runway overlay construction requirements, and compliance of materials with quality and lab testing specifications. Monitored safety of aircraft operations during construction period and resolved critical safety issues. Developed new procedure for provisional ramp construction.
- Introduced new airport pavement technologies in Peru, including non-destructive testing and Pavement Condition Index method. Trained six engineers in new methods.
- Conducted functional and structural non-destructive testing (NDT) evaluations in Peru. Completed overlay design for Ayacucho Airport based on functional/structural NDT evaluations. Reduced testing costs.
- Prepared technical specifications and manuals for use in airport construction. Presented graduate course in Pavement Design for Peruvian Civil Aviation Authorities and National University of Engineering in Lima.
- Served as Infrastructure Engineering Advisor for privatization/concession of Santiago International Airport in Chile. Key member of team that evaluated proposals. Developed 25-year airport infrastructure forecast and reviewed proposals. Developed effective procedure to judge proposals, adopted by entire team.

**Brazilian Air Force, Brazil**

1976 – 1996

**Engineer Officer**

- Oversaw all activities relating to military and civilian airfield pavement materials and design, construction, and rehabilitation. Performed functional and structural evaluations (destructive/NDT), construction, site reviews, and project supervision.
- Personally, developed two new procedures to evaluate runway roughness. Created several national standards for airports. Supervised up to 40 technicians. Managed multi-million-dollar budgets.
- Achieved \$8 million in savings during construction of \$100 million Rio Branco International Airport by adjusting design to incorporate less expensive local materials rather than proposed imported soil/stone.
- Directed analyses of laboratory tests on asphalt, cement, soils, asphalt & concrete mixes, and other materials.
- Served as Head of Standards and Specifications Section (1982-1983). Supervised engineering staff.
- Researched and authored papers on various soil, runway, overlay, PMS, safety, and runway friction topics.

**ACADEMIC & RESEARCH POSITIONS**

- Visiting Professor, National University of Engineering, Peru (1999-2008)
- Visiting Professor, Aeronautics Institute of Technology, Brazil (1991-1996)
- Visiting Professor, Civil Eng. Dept., University of Sao Paulo, Brazil (1991-1995)
- Visiting Professor, COPPE/UFRJ – Fed. Univ., Brazil (1993)
- Head of Aeronautics Infrastructure Eng./Assoc. Prof., Aeronautics Institute of Technology, Brazil (1989-1991)
- Head of Geotechnical Div./Assoc. Prof., Aeronautics Institute of Technology, Brazil (1988-1989)
- Assistant Professor, Souza Marques University, Brazil (1979–1982)

**EDUCATION AND EXPERIENCE**

- Graduate, High Staff College, Air University, Brazil (1992)
- Ph.D. in Civil Engineering, University of Maryland, College Park, MD (1987)
- M.Sc. in Civil Engineering, COPPE/UFRJ, Rio de Janeiro, Brazil (1982)
- Graduate, Occupational/Safety Engineering, FTESM University, Rio de Janeiro, Brazil (1976)
- Engineering Officer's School, Brazilian Air Force, Air University, Brazil (1976)
- BS in Civil Engineering, FTESM University, Rio de Janeiro, Brazil (1975)
- BS in Agronomy (Engineering), Rural Fed. University of Rio de Janeiro, Brazil (1970)

**COMPUTER SKILLS**

- MS Office, Project, Visio, Access, Multilayer Elastic Solutions computer programs, ICAO software for ACN/PCN method, FAA software for airfield pavement design and overlay, Runway Roughness Evaluation program, AASHTO guide

**LANGUAGES**

- English, Spanish, Portuguese

**AWARDS & RECOGNITION**

- Merit Certificate for Outstanding Performance, International Civil Aviation Organization, Montreal, (2004)
- Recognition for Service and Dedication, “Corporacion Peruana de Aviacion Civil,” Peru (1999)
- Military Engineer Merit Medal, Degree of Cavalier, Brazilian Association of Military Engineering (1996)
- Good Services Acknowledgement, Directorate of Engineering, Braz. Air Force (2x, 1983, 1996)
- Good Services Acknowledgement, Aeronautics Institute of Technology, Brazil (1991)
- Bronze Medal, Brazilian Air Force, 1986

**PROFESSIONAL AFFILIATIONS**

- Member/Editorial Advisory Panel, Institution of Civil Engineers/Transport/United Kingdom, 2012-2018
- Friend/AV070 Aircraft/Airport Compatibility Committee, Transportation Research Board (TRB)/USA
- Member/AFD60 Committee on Flexible Pavement Design, Transportation Research Board (TRB)/USA
- Member/D-04 & E-17 Committee Member, American Society for Testing and Materials (ASTM)/USA
- Member/Airfield Pavement Committee Member, American Society of Civil Engineers (ASCE)/USA
- Member/Founder, Latin American and Caribbean Association of Airfield Pavements (ALACPA)
- Member/Past President (2x), Brazilian Paving Association (ABPv)
- Former Executive Secretary, CAR/SAM Airport & Ground Aids/Airport Operations Subgroup, ICAO

**PUBLICATIONS & PRESENTATIONS**

- Over 120 papers, 400 research/technical reports, and over 110 invited talks. Complete list available upon request

12 April 2019