



CURRICULUM VITAE

Costas Pappas

May 2021

Curriculum Vitae

COSTAS PAPPAS

39 years in Nuclear projects

Montreal, Quebec, Canada
 Telephone: +1 (438) 979-1599
 E-mail: pappasc@hotmail.com

EDUCATION

1952-1958	Second-High School. (2nd), Athens, Greece
1960-1961	Radioelectric School, Athens, Greece
1966-1969	B.Sc. Studies in Physics (Cum Laude), Université de Montréal, Montreal
1970-1972	M.Sc. Studies Solid State Physics, McMaster University, Hamilton, Ontario, Canada
1972-1973	Assistantship in Metallurgical Engineering, Ecole Polytechnique de Montreal
1974-1976	Ph.D. Studies in Nuclear Physics McMaster University, Hamilton, Ontario, Canada
1976-1978	M.Sc. Studies in Computer Science, McMaster University, Hamilton, Ontario, Canada
1982	Computer Aided Design (CADDs) training by Intergraph, Quebec, Canada sent by AECL for further training of AECL personnel
1982	Computer Aided Design (CADDs) training by Intergraph, Alabama, USA sent by AECL for further training of AECL personnel

POSITIONS HELD - EXPERIENCE

ATOMIC ENERGY OF CANADA (AECL)

Design Nuclear Physicist - Engineer, June 1978 – March 2006

Senior Design Engineer with experience related to all aspects of I&C, Safety related systems, Radiation monitoring and Reactor Control of Power and Research reactors.

I worked in various fields, such as Research, Design, Safety, Procurement, Teaching/Coaching on domestic CANDU Nuclear Stations and International projects.

CANDU 6 Nuclear Stations, Gentilly 1&2-Quebec, Point Lareau-New Brunswick, Cordoba - Argentina, Wolsong 1 to 4 -Korea, Qinshan 1&2 – China, Cernavoda 1&2 - Rumania.

CANDU 600MW SYSTEMS DESIGN

- 63461 Emergency Water Supply system (EWS)

EWS is environmentally and seismically qualified. It provides cooling water to Steam Generators (boilers) when the normal systems (boiler feedwater and LPSW and/or Class N and III power) are unavailable. It draws its power from the EPS (Diesels). The EWS draws its water from the lake, providing an independent indefinite source of coolant water.

- 67314 Containment Isolation System

The containment system will be used to initiate containment isolation, when necessary, to limit the release of radioactive nuclides from the containment envelope of a CANDU 600MW Nuclear Power station. Radiation Monitors shall provide a continuous measurement of the gamma field within the energy window of the monitor at the detector location. Pressure Transmitters will monitor the pressure within. Temperature Transmitters will measure the temperature.

- 63431 Dousing System
- 63495 Gas Chromatograph (GC)
- *Gas Chromatograph is required in Nuclear Power Reactors to analyze samples of the helium cover gases coming from various systems of the Plant and determine the concentration of hydrogen (H₂), deuterium (D₂), oxygen (O₂) and nitrogen (N₂) gases.
The GC shall alert the operator to the presence and build-up of concentrations of the above-mentioned gases.
The GC system shall automatically select and condition the samples for analysis and return them back to the process. Provision for manual sampling shall also be available.
Data from the GC is collected at specified intervals displayed locally on the CRT screen and logged. Local and remote alarms and analog outputs will be provided.*
- 67878 Tritium in Air Monitor
- Dosimetry Laboratory for Nuclear Stations, Design Specifications and Guide, Montreal, 1985
- Post Accident Air Sampling Monitor (PAASM)
- Fixed Area Monitors - for Nuclear Stations, Design Specifications and Guide, Montreal, 1983
- Hand Foot and Frisker Monitors, Whole Body, Portal & Laundry Monitors
- Portable Radiation Monitors (Survey-alpha, Beta, Gamma, Neutron, Waste & Other Monitors)
- Liquid Effluent System
- Gaseous Effluent System

- Dousing system for CANDU-600 MW Stations, Proceedings on Advanced Nuclear Power Systems, Toronto, 1993
- Containment System for CANDU-6, Design Specifications and Guide, Montreal 1986
- Emergency Water Supply System for CANDU-6, Design Specifications and Guide, Montreal 1983
- Whole Body and Hand Foot and Frisker Monitors for Nuclear Stations, Guides and Manuals for Radiation Monitoring Systems, Montreal, 1982
- Tritium in air Monitor, Technical Specifications, Design Guide and Manual, Montreal, 1981

KOREAN MULTIPURPOSE RESEARCH REACTOR (KMRR)- HANARO, Montreal, 1989

- Conceptual and Detailed design of the **Reactor Regulating System (RRS)** for the Maple 30 MW Experimental Korean Multipurpose Research Reactor (KMRR). This design was sold by the Koreans to Greece in converting the 5 MW Greek Reactor to 10 MW in 2009.
- Training the overseas customers as a part of this project.

THERAC-25 AND THERATRON CANCER TREATMENT MACHINES, Ottawa, 1987

- Member of a multidisciplinary team from three different sites; performed Safety & Reliability analysis (FMEA & FTA using CAFTA software) of the THERAC-25 (a Linear Accelerator Cancer therapy machine that led to litigation in U.S.A);
- It was multimillion dollars equipment. An analysis was also performed for another equivalent machine, the Theratron. Reports were prepared and submitted to AECL Medical in Ottawa. Redesign of the responsible part of the system

COMPUTER SERVICES and CADDS Montreal, 1986

- Develop DECOM, Decommissioning Cost Estimate Software. A Commercial Decommissioning package. A tool to estimate the Decommissioning costs for the Gentilly-1 (Quebec) Nuclear Reactor successfully;
- This DECOM Software was updated and used for St-Onofre (California-USA) and NPD (Ontario) Nuclear stations; This package was sold to USA and is used on international base to decommission Nuclear Stations.
- Computer Aided Design Drafting (CADDs) Technical and Software support, training of the AECL Operators in Montreal and Toronto.
- Develop CICOM, a wiring Software package, including Design Guide and User Manual for preparing the on-line wiring lists to install the Electronic systems for the Frigates of the Canadian Navy. Montreal, 1986

SNC LAVALIN NUCLEAR Inc.

Senior Design Engineer / Consultant, March 2006 – December 2010

Consultant for BRUCE UNIT-1, 800 MW Nuclear Generating Station Restart project, designing the following systems:

- Gas Chromatograph system
- D2O in H2O Leak Detection system
- Reactor End Shield Cooling system RTD Replacement
- Restore PHT & Moderator D2O (Heavy Water) Upgrader system
- BRUCE “A” Unit 3 Steam Generators Replacement (SGR Replacement)
- Component Condition Assessment of the Isotope production (Moly Facility) in CRL and production

International nuclear projects (PBMR South Africa)

Pebble Bed Modular Reactor (PBMR) – Centurion, South Africa

- Prepared **Technical Specification, Design Guides, Design Descriptions and Design Manuals** for twenty-five (25) Radiation monitoring and other Related systems.
- Consult the South African Reactor Control Team for techniques to develop a Reactor Regulating System Control Algorithm for the PBMR Reactors.

ATOMIC ENERGY OF CANADA (AECL)

Back to AECL, this time as a Consultant

Chalk River Nuclear Laboratories (CRNL) – Canada January 2011-December 2017

Senior I&C Design Engineer / Chief Nucleonic Specialist

Completing 39 years of Meritorious Service in the Nuclear Industry!

Upgrading NRU (National Reactor Universal) Control system, Designing and installing.

- The **Ion Chambers** system to measure the Reactor Neutron Flux.
- The **Mean Power Trip** system to TRIP (shutdown safely) the Reactor
- The **Control Rod Magnetic amplifier** for the NRU reactor.

Upgrade of various instruments for the Reactivity system of NRU and organize the Spare parts Inventory.

LANGUAGES WITH ABILITY TO LECTURE:

English, Greek (mother tongue), French (fluent), Italian (functional)

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

- Prof. Eng. Ontario (PEO) – Canada
- Canadian Nuclear Society (CNS) – Canada
- Member of Society of Professional Engineers and Associates of AECL (SPEA)

SCHOLARLY AND PROFESSIONAL ACTIVITIES

- Mc Gill University, Montreal, Quebec, Canada, Part-time Engineering Lecturer, giving evening courses for CANDU 600 MW Reactor Control, to Graduate Engineering students.
- Secretary/Treasurer of the Canadian Nuclear Society (CNS) for Quebec (1996-2000)

COMMUNITY & SOCIAL ACTIVITY

- President of the Hellenic Canadian Federation of Ontario (HCFO) (representing Canadians of Hellenic heritage in the province of Ontario) 2003-2005 & 2006-2008.
- Member of the Board of Directors of the Hellenic Home for the Aged. Organization with a 44 million budget, 200 employees and 128 beds. 2003 -2008
- President of the Canadian Hellenic Congress (CHC) (representing Canadians of Hellenic heritage from coast to coast in Canada) 2012.

PUBLICATIONS

ATOMIC ENERGY OF CANADA (AECL)

1. XX-60441-TS-002 **Resistance Temperature Detectors for Nuclear Power Plants**
Published 2001
2. XX-60441-TS-020 **High Temperature Connectors for Nuclear Power Plants** Published
2003
3. XX-60441-TS-022 **Cable and Connector Assembly for Resistance Temperature
Detectors** Published 2002
4. XX-60462-TS-001 **Direct Operated Solenoid Valves for Pilot Service** Published 2002
5. XX-67314-TS-001 **Containment Isolation Monitors** Published 1979
6. XX-67873-TS-001 **Fixed Area Monitors** Published 1979
7. XX-67874-TS-001 **Portal Monitoring System** Published 1997
8. XX-67874-TS-002 **Contamination Monitoring Station** Published 1997
9. XX-67874-TS-004 **Laundry Monitor** Published 1997
10. XX-67874-TS-004, **Laundry Monitor** Published
11. XX-67877-TS-002 **Contamination Portable Monitors** Published 1980

12. XX-67878-TS-001 **Tritium in Air Monitor** Published 1979
13. XX-67882-TS-001 **Liquid Effluent Monitor** Published 1980
14. XX-67883-TS-001 **Gaseous Effluent Monitor** Published 1980
15. XX-67885-TS-001 **Post-Accident Air Sampling and Monitoring System** Published 1980

PEBLE BED MODULAR REACTOR(PBMR) SOUTH AFRICA

16. 017020-C14-48EG-0001 **Carbon - 14 Monitor** Published 2007 Centurion South Africa.
17. 017020-CAM-48EG-0003 **Continuous Air Monitor** Published 2007 Centurion South Africa.
18. 017020-CPM-48EG-0001 **Contamination Portable Monitor** Published 2007 Centurion South Africa.
19. 017020-FAM-48EG-0001 **Fixed Area Monitor** Published 2007 Centurion South Africa.
20. 017020-FCM-48EG-0002 **Fixed Contamination Monitor** Published 2007 Centurion South Africa.
21. 017020-GC-48EG-0001 **Gas Chromatograph** Published 2007 Centurion South Africa.
22. 017020-GEM-48EG-0001 **Gaseous Effluent Monitor** Published 2007 Centurion South Africa.
23. 017020-LEM-48EG-0001 **Liquid Effluent Monitor** Published 2007 Centurion South Africa.
24. 017020-PAD-48EG-0001 **PAD and Teledosimetry System** Published 2007 Centurion South Africa
25. 017020-PEM-48EG-0001 **Carbon - 14 Monitor** Published 2007 Centurion South Africa.
26. 017020-RTD-48EG-0004 **Resistance Temperature Detectors** Published 2007 Centurion South Africa.
27. 017020-SST-48EG-0001 **Austenitic Seamless Cold Drawn SS Tubing** Published 2007 Centurion South Africa.
28. 017020-SV-48EG-0001 **Direct Operated Solenoid Valves for Pilot Service** Published 2007 Centurion South Africa.
29. 017020-SWM-48EG-0003 **Radioactive Waste Total Gamma Monitor** Published 2007 Centurion South Africa.

30. 017020-TAM-48EG-0001 **Tritium in Air Monitor** Published 2007 Centurion South Africa.
31. 017020-VPM-48EG-0003 **Vehicle Portal Monitor** Published 2007 Centurion South Africa.
32. 017020-WBM-48EG-0001 **Portal and Whole-Body Contamination Monitor** Published 2007 Centurion South Africa.
33. 017020-LAUNDRY-48EG-0004 **Laundry Monitor** Published 2007 Centurion South Africa

KOREAN MULTIPURPOSE RESEARCH REACTOR (KMRR) - HANARO

34. DM-37-63700-001 **Reactor Regulating System -RRS for KMRR** Published 1990
35. PSP-37-66400-014 **Program Specification for the KMRR RRS (SI 63700)** Published 1990

PAPERS

- Real time simulation of the KMRR prototype Korean Nuclear Reactor, Paper presented at the Canadian Nuclear Society 4th International conference, on Simulation Methods in Nuclear Engineering, Chateau Champlain, Montreal, 1993
 - A Control Scheme for Small Reactors, Montreal, 1988

 - A Database for University utilities, M. Sc Thesis in Computer Science, McMaster University, Hamilton, Ontario, 1978
-