

Anthony C. Attard Ph.D.

## **EXPERIENCE**

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### **REACTOR PHYSICIST**

1990 to Present

U. S. Nuclear Regulatory Commission, Rockville, MD.

- Twenty five years in the Nuclear Industry. This includes conducting safety assessments (conformance with NRC rules, regulations, and guidelines), at the Vendor or licensee's main office or nuclear facility.
- Lead Engineer, responsible for the review of the neutronics and thermal-hydraulic analyses of existing reactors and advanced reactors, such as, the Westinghouse AP600 (Advanced Passive) reactor, and the ABB-CE System 80+ reactor. Experienced in analyzing and participating in thermal-hydraulic testing of existing fuels and advanced reactor fuels at various Vendor sites in the U.S. and abroad. These tests were designed to arrive at a more efficient nuclear fuel, contributing to a safer fuel while enhancing the performance and economics of operation of the nuclear plant.
- Lead Engineer, responsible for the review of the neutronics and thermal-hydraulic of the Tritium Production Core (TPC), in conjunction with the Department of Energy.
- Member of the NRC team overseeing the DOE usage of weapon grade material (Plutonium) in commercial reactors.
- Consultant to the Office of International Program in fuel management, reload and safety analysis, shutdown margin, neutronics and thermal-hydraulic methodologies.
- Frequently requested to brief foreign personnel from nuclear facilities around the world, regarding: control rod misalignment, mixed fuel reloads, and computer codes.
- Recognized as the in-house expert in safety reviews of Vendor's new fuel "Critical Heat Flux (CHF) Correlation development. This includes review of analytics, and pertinent computer codes, such as VIPRE, CASMO, SIMULATE, COBRA, etc.
- Recognized in-house expert in transient safety analysis of the Small Break Loss of Coolant Accident (SBLOCA), boron dilution event.
- Currently, tasked with assuming lead responsibilities regarding reviews of on-site storage and surface storage of commercial spent fuel at nuclear facilities.
- Performed end-of-cycle fission products (Isotopic) inventory studies.
- Performed evaluations and inspections of complex technical issues, regulations and guidelines as well as prepare Safety Evaluation Reports (SER) and inspection reports.
- Prepared technical position papers and evaluations, provide requested information, make presentations to NRC management, the advisory committee on reactor safe guards (ACRS), the Chairman, and the Commission in support of any "high priority" technical issue that may come up.
- Served as member of various committees including working groups, and subcommittee task forces regarding neutronics and thermal-hydraulic issues.
- Identified and evaluated necessary confirmatory research to be performed by the office of Nuclear Regulatory Research, in areas of steady-state, transient neutronics and thermal-hydraulics safety issues.
- Keep appropriate levels of management aware of key issues and decisions made.
- Drafted correspondence and reports in response to inquiries received from the Commission, members of Congress, other Federal Agencies, state and local governments and the general public.
- Technical Assistant to the Division of System Safety and Analysis (DSSA), responsible for providing technical input to the decision making process, as well as assuming responsibility for administering the division contract budget.

### **Significant Accomplishments:**

- As lead investigator at a Vendor safety inspection, uncovered unaccounted biases built into the safety limit calculation, significantly effecting the margin of safety associated with the operating limit.

- Immediate response by the Vendor resulted in a successful resolution of the problem.
- In reviewing a technical submittal, discovered that the authors of the submittal had made a serious mathematical mistake that could have lead to a reactor operating at a power level much higher than it was licensed allowed. The problem was corrected, leading to an acceptable resolution of the problem.
- Recognized for making significant contributions to the Office of International Program byway of presenting technical briefings to foreign representatives in a timely, clear, and concise manner.
- Independently propose staff positions and responses to safety concerns that consistently result in a positive action.
- Reviewed, recommended and implemented changes to codes and standards, Regulatory Guides, NRC regulations and policies.
- Participated in and led numerous research review groups and recommended research or changes in research programs.
- Represented the NRC in technical meetings with industry and academia. Recommended directions that resulted in a successful resolution and closure.
- Recognized with a special award by the division Director for preparation of the division's budget of \$8M/year.

**ADJUNCT PROFESSOR**

1990 to Present

University of Maryland

- Responsible for teaching required undergraduate and graduate levels courses (Reactor Kinetics, Fuel Management, Reactor Safety Analysis, Radiation Theory and Dosimetry, Reactor Systems, Thermal-Hydraulics, Fluids Mechanics, and Nuclear Engineering) within the Office of Professional Development (OPD).
- Consultant to the OPD in course development, course review, program structure and marketing of the nuclear program to government laboratories, nuclear facilities and the private sector. Research advisor to graduate students.
- Committee member responsible for formulating and establishing the Health Physics degree program at the University of Maryland, within the Office of Special Programs.
- Consultant to OPD regarding the establishment of the distance learning program in Nuclear Engineering.
- Responsible for formulating and implementing computerized nuclear engineering courses as part of the nuclear program at the University of Maryland.
- Subject matter expert in such fields as Nuclear Physics, Nuclear Engineering, Thermal-Hydraulics, and Fluid Dynamics.
- Travel extensively on behalf of the University of Maryland to off campus locations, either to teach required degree courses or consult at the site. This is part of the computer distance learning program.

**Significant Accomplishments:**

- Successfully implemented the Nuclear Engineering Program via distance learning.
- Evaluated and updated all the mid-to-upper level courses in the Nuclear Engineering Program.
- Contributed significantly to the Hazardous Waste Management Degree Program.
- Chairman of the Health Physics Committee since 1997.
- Successfully promoted the Health Physics and the Nuclear Degree Program at various institutions and locations.

**SENIOR SCIENTIST**

1986 to 1990

B-K Dynamics, Rockville, MD

- Defense Contractor to DOD, DOE, NAVSEA, and National Laboratories.

- Responsible for soliciting and working my own contracts in such areas as the Strategic Defense Initiative (SDI), SP-100 space based reactor program.
- Coordinated the efforts of major corporations Raytheon, General Dynamics, and Motorola, in the nuclear hardening of the Navy's STANDARD Missile (SM-2).
- Generated the initiative with NAVSEA to extend the hardening program to include High Power Microwave (HPM) hardening.
- Compiled extensive lists of emerging and maturing technologies for the Air Force and U.S. Department of Research and Engineering (USDR&E).

**Significant Accomplishments:**

- Resolved key technical issues while maintaining open channels of communications between the participating agencies, laboratories and companies.
- Evaluated and compiled a list of Allied Technologies pertinent to the Strategic Defense Initiative (SDI) as Lead Scientist working on the SP-100 program.

**NUCLEAR SCIENTIST/ ENGINEER**

1981 to 1986

Westinghouse-Bettis, Pittsburgh, PA

- Coordinated and managed the steady-state and transient neutronic and thermal-hydraulic re-analysis program for the Nimitz Class Reactors.
- Lectured in nuclear physics and mathematics at the Westinghouse-Bettis Nuclear Engineering School.
- Participated in numerous special and emergency task forces.

**Significant Accomplishments:**

- Successfully completed the re-analyses of the Nimitz class nuclear reactors.
- Received numerous accolades regarding my teaching techniques at the Westinghouse- Bettis Nuclear Engineering School.

**NUCLEAR SCIENTIST/ENGINEER**

1979 to 1981

B-K Dynamics, Rockville, MD

- Defense Contractor--Responsible for the design, computer simulation, and building of a new electron gun (Gyrotron).
- Team member responsible for designing and simulating the building of a free electron laser (FEL) gun at the Naval Research Laboratory in Washington D.C.

**Significant Accomplishments:**

- The FEL research effort resulted in breakthroughs in electron beam intensity development.

**MECHANICAL DESIGN ENGINEER**

1969 - 1971

McLaren Motor Racing, Collinbrook, England

- Actively participated in the design, development and production of Grand Prix, CAN-AM and Indianapolis 500 cars.

**Significant Accomplishments:**

- Five CAN-AM Championships.
- Three Formula One (F1) Grand Prix Championships.

## **EDUCATION**

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**CARNEGIE-MELLON**

**Ph.D., Nuclear Physics & Engineering, 1985**

**INDIANA UNIVERSITY**

**MS Nuclear Physics, 1979**

**UNIVERSITY OF MICHIGAN**

**BS, Physics and Mathematics, 1976**

## **SECURITY CLEARANCE**

Q Clearance(Active); Top secret and SBI , (In-active).

LIST OF PUBLICATIONS FOR  
ANTHONY C. ATTARD

Boron Dilution Reactivity Transients, An Overview of Past and Present Events. Published in NUREG/IA, December 1996.

Standard Missile-2 Block IV - Nuclear Hardening Status, TR-9-34, 17 November 1989, UNCLASSIFIED.

The Nuclear Survivability Working Group (NSWG) Yearly Summary Report, TR-8-18, 31 December 1988, UNCLASSIFIED.

Nuclear Driven X-Ray Laser (U), BKD-9978-C-88, 28 April 1988, CONFIDENTIAL.

High Power Microwave (HPM) Susceptibilities/Vulnerabilities Considerations (U), BKD-9927-S-88, 18 February 1988, SECRET.

1987 OSD High Priority Militarily Critical Technologies List (MCTL), TR-8-05, November 1987, UNCLASSIFIED.

WSS Effectiveness Analysis: Threat Scenarios, September 1987, UNCLASSIFIED.

Users Guide to the Militarily Critical Technologies List (MCTL) and Supporting Documentation, TR-7-30, August 1987, UNCLASSIFIED.

DoD-Wide Signal Processing Overview, TR-7-23, 8 July 1987, UNCLASSIFIED.

IBM SCIMS, TR-7-08, February 1987, UNCLASSIFIED.

Master List of Militarily Significant Emerging Technologies, TR-7-05, 12 January 1987, UNCLASSIFIED.

Linkage of the Militarily Critical Technologies List (MCTL) to Generic Weapons Systems, TR-6-845, November 1986, UNCLASSIFIED.

Record of International Armaments Cooperation Meetings to Develop a Short-Range Anti-Radiation Missile (SRARM), TR-6-835, 31 October 1986, UNCLASSIFIED.

Plan for FORECAST II: International Cooperation, TR-6-815, September 1986, UNCLASSIFIED.

Identification of the Air Force Emerging Technologies and Militarily Significant Emerging Technologies, TR-6-810, 19 August 1986, UNCLASSIFIED.

DoD-Wide Technology Base Study Program Supporting Sensors and Signal Processing, Volume II - Sensor/Signal Processing Susceptibility and Hardening (U), BKD-9126-SNF-86, August 1986, SECRET NOFORN.

Use of High Power Microwaves as Tactical Directed Energy Weapons (U), BKD-9076-S-86, 21

July 1986, SECRET.

System/Technology Linkage, Air-to-Ground Missiles/Guided Bombs, TR-6-804, 16 July 1986, UNCLASSIFIED.

"A Resolution of the Stiffness Problem of Reactor Kinetics,"

Y.A. Chao and A.C. Attard, Nuclear Science and Engineering, 90, 40-46, (1985).

"Stiffness Confinement Method for Solving Nuclear Reactor Kinetics Equations, A.C. Attard, Doctor of Philosophy Thesis, Carnegie Mellon University, Pittsburgh, PA (1985).

Report of the 1982 Defense Science Board Summer Study on New Weapons Concepts Made Possible by Advanced Technology (U), BKD-6979, November 1979, SECRET.

Directed Energy Technology Strategy for Navy 6.2 Program (U), BKD-5358, November 1979, SECRET.

Threat Missile Models for High Power Radiation Damage Studies (U), BKD-5800, March 1980, SECRET.

Test of the Factorization Approximation in the  $^{40}\text{Ca}(p,2p)^{39}\text{K}$  Reaction at 148.2 MeV. W.P. Jones, D.W. Devins, D.L. Friesel, and A.C. Attard, R.S. Henderson, I.A. Svalbe, B.M. Spicer, V.C. Officer and G.G. Shute, Melbourne University. Bull. Am. Phys. Soc. 23, 594 (1978)

Experimental Test of the Factorization Approximation in the Reaction  $^{40}\text{C}(p,2p)^{39}\text{K}$  at 148.2 MeV. P.G. Ross, N.S. Chant, D.W. Devins, D.L. Friesel, W.P. Jones, A.C. Attard, R.S. Henderson, I.A. Svalbe, B.M. Spicer, V.C. Officer, and G.G. Shute, Phys. Rev. Letters 40, 1439 (1978).

Concept Feasibility of Laser Propulsion and High Power Microwave Techniques in Soviet Non-Nuclear Kill ABM and Anti-Satellite Applications (U), SECRET.

$^{40}\text{Ca}(p,2p)^{39}\text{K}$  Reaction at 150 MeV, D.W. Devins, D.L. Friesel, W.P. Jones, A.C. Attard, R.S. Henderson, I.A. Svalbe, B.M. Spicer, V.C. Officer, and G.G. Shute, Bull. Am. Phys. Soc. 22, 1023 (1977).

Multistep Processes in the  $^{12}\text{C}(p,2p)^{11}\text{B}$  Reaction at 100 MeV in an Asymmetric Energy Sharing Mode. D.W. Devins, D.L. Friesel, W.P. Jones, and A.C. Attard, Indiana University, I.A. Svalbe, V.C. Officer, R.S. Henderson, B.M. Spicer, and G.G. Shute, University of Melbourne.