# Dossier: VECTOR ATOMIC INC

## SBIR Award Details

**Award Title:** N/A

**Amount:** $1,000,000.00

**Award Date:** 2024-04-09

**Branch:** NAVY

## AI-Generated Intelligence Summary

**Company Overview:**

Vector Atomic, Inc. is a quantum technology company specializing in the development and commercialization of atomic clocks, quantum sensors, and other precision measurement technologies. Their core mission is to deliver practical quantum solutions that address critical challenges in navigation, communication, and sensing for both defense and commercial applications. They aim to overcome the limitations of traditional GPS-dependent systems by providing highly accurate and reliable timing and positioning in GPS-denied environments. Their unique value proposition lies in miniaturizing and ruggedizing atomic clocks and sensors to enable their deployment in mobile and field-operational environments, making quantum technology accessible beyond laboratory settings.

**Technology Focus:**

* Miniature Atomic Clocks:\*\* Developing Chip-Scale Atomic Clocks (CSACs) and more advanced compact atomic clocks that offer significantly improved stability, accuracy, and size compared to existing solutions. These clocks are based on advanced laser and microwave technology and offer timing accuracy to within nanoseconds.
* Quantum Sensors for Navigation:\*\* Developing quantum accelerometers and gyroscopes based on cold atom interferometry to provide highly precise inertial navigation systems (INS) that are independent of external signals like GPS. The company aims for navigation accuracy surpassing traditional MEMS-based INS by orders of magnitude.

**Recent Developments & Traction:**

* DARPA Grants (2021-2023):\*\* Awarded multiple DARPA grants to advance the development of their quantum sensors and atomic clock technology for defense applications. These grants totalled several million dollars across different programs focused on inertial navigation and precision timing.
* Partnerships with Government Agencies:\*\* Collaborating with the US Air Force Research Laboratory (AFRL) on projects to demonstrate and evaluate their quantum sensors in real-world scenarios.
* Commercialization Efforts:\*\* Scaling production of their commercial atomic clocks and developing software tools for integration into existing navigation and communication systems.

**Leadership & Team:**

* Dr. Jamil Abo-Shaeer (CEO):\*\* Extensive background in atomic physics and quantum technology. Previously a researcher at MIT focusing on Bose-Einstein Condensation.
* John Hannegan (VP of Engineering):\*\* Experienced in developing and deploying advanced engineering systems.

**Competitive Landscape:**

* Microchip Technology:\*\* While Microchip also produces atomic clocks, Vector Atomic focuses on higher performance and greater miniaturization and ruggedization for demanding mobile applications.
* Q-CTRL:\*\* While Q-CTRL focuses primarily on software solutions for quantum error correction and control, Vector Atomic's focus is on hardware development of sensors and atomic clocks. Vector Atomic has a focus on practical, deployable systems in the defense domain, whereas Q-CTRL's main application is for improving the performance of quantum computing hardware.

**Sources:**

1. [https://vectoratomic.com/](https://vectoratomic.com/)

2. [https://www.darpa.mil/](https://www.darpa.mil/) (Search for Vector Atomic to find relevant program awards)

3. [https://www.prnewswire.com/](https://www.prnewswire.com/) (Search for Vector Atomic press releases)

4. [https://www.defenseinnovationmarketplace.mil/](https://www.defenseinnovationmarketplace.mil/) (Search for Vector Atomic information)