REQUEST FOR EXPERIMENTAL LICENSE
Toyon Research Corporation

The applicant, Toyon Research Corporation ("Toyon"), seeks an experimental license to conduct over-the-air testing of an airborne digital radio frequency memory ("DRFM") radar payload, operated to evaluate its frequency-interaction performance with regard to a ground-based target radar. The DRFM payload is the same radar hardware previously authorized to Toyon under Call Sign WQ2XCT (File No. 0949-EX-CN-2025) (designated "mMinar"), now integrated as a modular payload aboard a Dragoon Coriolis small unmanned aircraft system ("sUAS"). The ground-based target radar is the same hardware previously authorized to Toyon under Call Sign WP2XXH (File No. 0905-EX-CN-2025). Both transmit frequency-modulated pulsed waveforms in multiple frequency bands allocated for radiolocation, using the antenna configurations previously authorized for that equipment. Output power is adjustable, with maximum ERPs specified below.

Toyon is conducting research and experimentation with the DRFM payload in support of several U.S. Department of War contracts and agreements, identified below:

> Contract No. N68936-25-D0006 — Naval Air Warfare Center Weapons Division (NAWCWD), China Lake, California; development and fielding of intelligence, surveillance, reconnaissance, and targeting (ISR&T) systems.
> Contract No. N68335-24-C-0119 — Naval Air Warfare Center Aircraft Division (NAWCAD), Lakehurst, New Jersey; Long Range Passive Surveillance in Anti-Access/Area-Denial Environments.
> Contract No. N68335-25-C-0382 — NAWCAD Lakehurst; Persistent Airborne Counter-Unmanned Aerial System Surveillance.
> Agreement No. HQ0202-26-9-0008 — Golden Dome of America (GDA) program, A-SPIKE.

The controlling instrument for this experiment is Agreement No. HQ0202-26-9-0008 (period of performance June 25, 2026 - July 1, 2028; current Phase I ends April 1, 2027). The requested experimental authorization is for use of this equipment to facilitate controlled

experimentation in support of these efforts, including a Technology Readiness Level 7 (TRL-7) demonstration intended to support a future proposal for scaled manufacturing.

The DRFM payload is operated aboard the Dragoon Coriolis sUAS (up to two units, operated one location at a time, each at maximum EIRP). At the three flight-test ranges identified below, the payload operates as a mobile station at altitudes below 400 feet above ground level along a fixed "racetrack" flight path, with all emissions directed toward the ground at all times. Prior to flight testing, the payload is also operated as a fixed station at two developmental-testing sites (Goleta and Fort Collins), where it is mounted on a pole. The transmitter is operated under manual on/off control and is equipped with an override kill switch permitting the operator to terminate transmissions immediately.

The ground-based target radar is operated as a fixed, ground-emitting station at each site and serves as a cooperative target for the DRFM payload; it remains on the ground at all times. Its per-band ERPs and emission designators are identical to those of the DRFM payload, as set forth below.

Because both emitters are owned and controlled by Toyon, operate on private, controlled ranges, transmit only within the frequency bands authorized under this license, direct the airborne emissions toward the ground at all times, and are subject to both manual and override shut-down, the proposed operations present no risk of harmful interference to authorized stations. Toyon will cease operations immediately upon any notification or indication of harmful interference.

The proposed experiment will support the development of a compact, airborne wideband RF system capable of operating across multiple frequency bands. The objective is to demonstrate the performance and maturity of the airborne DRFM payload under realistic over-

the-air conditions on a representative ground radar. The results may inform future applications in radiolocation and electronic-support systems and contribute to more efficient use of spectrum in this service.

Frequency Bands (applicable to both the DRFM payload and the ground target radar):

1. 3100 MHz - 3300 MHz | ERP 25.48 W (mean) | Frequency tolerance < ± 0.000005% (50 ppb) | Emission designator 200MQ3N | Pulsed LFM
2. 5250 MHz - 5350 MHz | ERP 27.01 W (mean) | Frequency tolerance < ± 0.000005% (50 ppb) | Emission designator 75M0Q3N | Pulsed LFM
3. 9500 MHz - 10000 MHz | ERP 28.54 W (mean) | Frequency tolerance < ± 0.000005% (50 ppb) | Emission designator 400MQ3N | Pulsed LFM
4. 17100 MHz - 17200 MHz | ERP 45.23 W (mean) | Frequency tolerance < ± 0.000005% (50 ppb) | Emission designator 100MQ3N | Pulsed LFM
5. 33400 MHz - 36400 MHz | ERP 6.9 W (mean) | Frequency tolerance < ± 0.000005% (50 ppb) | Emission designator 600MQ3N | Pulsed LFM

Flight-Test Ranges (DRFM payload operated as a mobile station below 400 feet AGL; target radar operated as a fixed station on the ground):

Atascadero Ranch — 5363 Parkhill Road, Santa Margarita, CA 93453. Coordinates: 35.3931564, -120.5262917. Operating radius: 0.5 km.
Santa Margarita Ranch — 9000 Yerba Buena Avenue, Santa Margarita, CA 93453. Coordinates: 35.400034, -120.613238. Operating radius: 0.7 km.
Loveland — 6350 Aviation Circle, Loveland, CO. Coordinates: 40.411822, -104.916479. Operating radius: 0.25 km.

Developmental-Testing Sites (DRFM payload pole-mounted as a fixed station; target radar operated as a fixed station on the ground):

Goleta — 6800 Cortona Drive, Goleta, CA 93117. Coordinates: 34.4331, -119.8664. Operating radius: approximately 200 feet (0.06 km).
Fort Collins — 3800 Automation Way, Suite 300, Fort Collins, CO 80525. Coordinates: 40.534981, -105.040723. Operating radius: approximately 100 feet (0.03 km).

Airports and airfields in the vicinity of the California ranch sites:

Santa Margarita Ranch Airport (5CL1), Santa Margarita, CA — approx. 8 mi
San Luis Obispo County Regional Airport (KSBP), San Luis Obispo, CA — approx. 22 mi
Paso Robles Municipal Airport (KPRB), Paso Robles, CA — approx. 33 mi
Sinclair Field / Flying R Ranch Airfield (KSMG), San Miguel, CA — approx. 37 mi

Airports and airfields in the vicinity of the Loveland, Colorado site:

Northern Colorado Regional Airport (KFNL), Loveland, CO — approx. 9 mi
WKR Airport (65CO), Fort Collins, CO — approx. 15 mi
Vance Brand Airport (KLMO), Longmont, CO — approx. 31 mi
Boulder Municipal Airport (KBDU), Boulder, CO — approx. 45 mi

Denver International Airport (KDEN), Denver, CO — approx. 55 mi

The DRFM payload uses the antenna configuration previously authorized under WQ2XCT. When flown, the antenna is mounted on the sUAS and operates below 400 feet above ground level; when pole-tested at the developmental sites, it is mounted on a lift. Although the lift can extend to approximately 30 feet, Toyon will not emit above 6 meters (approximately 19.7 feet). No directional antenna (other than radar) is used.

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Contract Number(s): N68936-25-D0006; N68335-24-C-0119; N68335-25-C-0382; HQ0202-26-9-0008 (controlling instrument — GDA).

Requested Duration: 24 months.