Exhibit: Detailed Purpose of Experiment

Applicant: Rainmaker Technology Corporation

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1. Background and Primary Purpose

Rainmaker submits this document to provide a detailed explanation of the scientific purpose and operational rationale for atmospheric research scheduled October 1, 2026 through March 31, 2027, to be conducted in the Pendleton, Oregon region.

The primary objective of this campaign is to test scanning methods and software improvements in the validation of cloud seeding effects in a natural orographic cloud environment. The central scientific question motivating this campaign is: Are we fully understanding the physical progression of weather systems following seeding events and can gaining a higher spatiotemporal resolution view of the system improve our seeding ability?

To answer this question, the campaign will deploy the ROARS phased array Ku-band radar, UAV-based seeding platforms, and a suite of supporting surface and upper-air instrumentation to detect, characterize, and quantify radar signatures attributable to seeding-induced glaciation events in natural orographic cloud systems.

Example photo of the ROARS system

2. Technical and Operational Justification

Rainmaker has selected the Agile Radar ROARS Ku-band (13.5 GHz) electronically- and mechanically-scanning radar as a detection asset for this campaign based on several critical technical advantages over conventional operational weather radar:

- **Spatiotemporal resolution:** ROARS combines electronic beam steering with mechanical azimuth positioning, allowing rapid sampling of a selected region without mechanically repositioning the antenna for every radar dwell. Agile Radar has demonstrated execution of a 120° PPI sector with 1° azimuth spacing in approximately 10 seconds, as well as targeted RHI scanning of selected storm features. This sampling capability provides substantially more frequent observations of evolving cloud structures than conventional multi-minute volume scans and is directly applicable to tracking changes following seeding events.
- **Scanning capability:** The ROARS antenna electronically scans over approximately ±60° in both azimuth and elevation and is integrated with an azimuth rotator for broader surveillance coverage. The radar supports PPI and RHI scan strategies and can transition between surveillance and targeted observations. During the DOE ARM CONVECT campaign, ROARS was used to perform agile adaptive sampling of convective clouds, including targeted RHI observations of selected features.
- **Adaptive radar operation:** ROARS supports configurable radar dwell and coherent processing interval modes, including selection of pulse length, number of pulses, digital receiver processing configuration, pulse repetition interval, and staggered pulse repetition intervals. These parameters can be changed through manual or automated radar control, allowing scan strategies to be adjusted to the range, sensitivity, and temporal-resolution requirements of a particular weather event.
- **Reflectivity and Doppler measurements:** ROARS provides real-time reflectivity and Doppler products suitable for tracking changes in precipitation structure and cloud dynamics. Demonstrated products include calibrated reflectivity, radial Doppler velocity, and spectrum width. Agile Radar specifies a noise-equivalent reflectivity of approximately 5 dBZ at 10 km using 250 m range resolution for the baseline system configuration. These measurements provide the primary radar observables needed to identify the location, magnitude, and temporal evolution of reflectivity changes following seeding. The CONVECT deployment demonstrated high-quality PPI and targeted RHI observations using the prototype system.
- **Electronic steering and targeted observations:** Electronic steering allows the radar to repeatedly interrogate a limited atmospheric volume rather than continually performing a predetermined full-volume scan. ROARS has demonstrated automated storm

identification, prioritization, and tracking, with targeted RHI scans maintained on selected reflectivity features. For this campaign, the same capability can be applied to repeatedly sample the expected seeding plume location and its downwind evolution.

- **Operational suitability:** ROARS has already been demonstrated in a fixed ground-based weather research installation. During the 2025 DOE ARM CONVECT campaign, the radar was installed on a tower and operated continuously as an adaptive weather radar. The campaign report states that radar uptime was nearly 100 percent and that the system produced high-quality observations following initial commissioning. The radar itself is approximately 38 kg excluding the tower, requires approximately 500 W maximum input power, and is specified for operation from −40 °C to +70 °C, making it suitable for extended outdoor field deployment.

3. Strategic Significance and Public Interest

- **Drought relief and water resource management:** Rainmaker provides cloud seeding services intended to increase precipitation and support water resource management. Improved radar observations provide a more complete record of atmospheric conditions before, during, and after seeding and improve Rainmaker's ability to evaluate the response of individual weather systems.
- **Advancing the scientific foundation of cloud seeding:** The ROARS deployment will provide rapid-update reflectivity and Doppler observations that can be compared with UAV measurements and supporting surface and upper-air instrumentation. The resulting dataset will allow Rainmaker to evaluate whether increased spatiotemporal sampling improves identification and characterization of changes associated with seeding.
- **Development of improved observing methods:** A central purpose of the campaign is to test radar scanning strategies and software methods rather than simply operate an existing weather-surveillance configuration. ROARS has previously demonstrated adaptive surveillance, automated feature identification, and targeted RHI sampling, providing a technical basis for adapting those methods to cloud-seeding research.
- **Regulatory compliance:** Conducting the campaign with a defined experimental objective, documented radar configuration, and repeatable observing methodology will provide a traceable observational record for evaluating the results of seeding operations and supporting subsequent scientific and regulatory review.