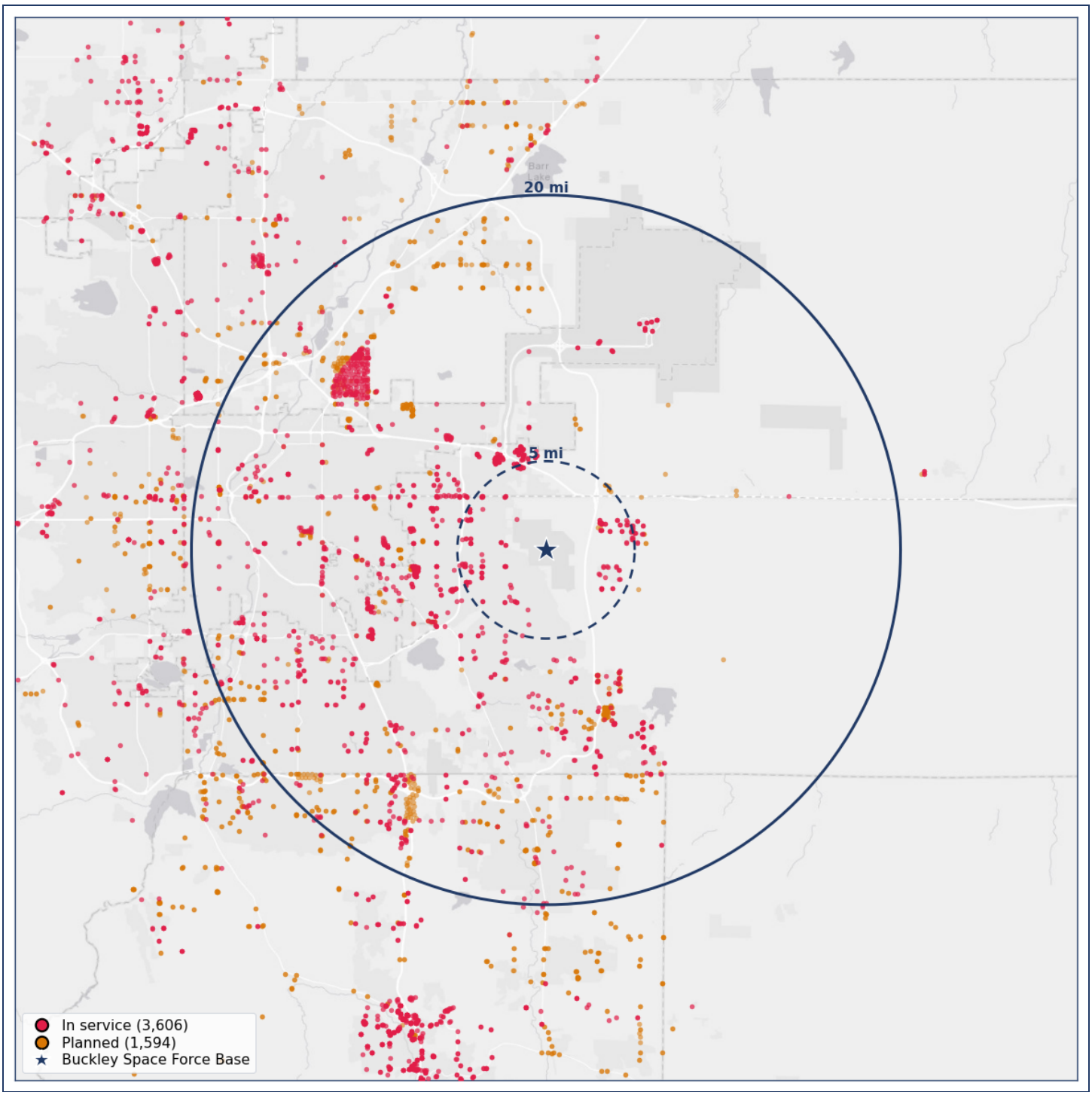
Buckley Space Force Base

National Security Exposure Assessment

Joshua Michael
Email: josh@nexanet.ai

September 2, 2026



Executive Assessment

Buckley Space Force Base in Colorado is home to space-based missile warning (the 2nd Space Warning Squadron) and to the 120th Fighter Squadron's Aerospace Control Alert mission. An after-hours surge among warning, intelligence, and security people could be an early sign of a missile-warning event — before anything is public.

This study asks a simple question: if someone drove from a nearby home to a gate and back, would they pass a Flock camera? The numbers are a model of possible drives, not a count of real people.

At 20 miles, about 81.1% of those modeled trips pass a camera. Another 2.6% might pass one, 4.9% avoid them, and 11.3% could not be determined. At 5 miles, 63.7% pass a camera, 2.7% might, 21.4% avoid them, and 12.2% could not be determined. This is a model of routes, not proof that anyone was watched.

HEADLINE RESULT · MODELED TRIPS TO A GATE

20 MILES OUT

81.1% **Passes a camera**
A confirmed camera sits on every plausible road to a gate.

2.6% **Might pass**
A camera is nearby, but facing could not be confirmed. The file's rotationAngle is a housing-orientation field, not travel direction, so unnamed or poorly oriented cameras are not counted as hits.

4.9% **Avoids all cameras**
No confirmed camera on any plausible road.

11.3% **Couldn't determine**
No complete legal route to a reviewed gate could be established for these trips.

5 MILES OUT

63.7% Passes **2.7%** Might pass **21.4%** Avoids **12.2%** Couldn't determine

Couldn't determine is 12.2% here because no complete legal route to a reviewed gate could be established for these trips.

Installation Context

Buckley Space Force Base supports more than one hundred mission partners and publicly acknowledged space-based missile warning, space surveillance, communications, intelligence, cyber, and air operations [E50, E51]. The 2nd Space Warning Squadron's official mission is to deliver global space-based missile warning to U.S. and allied forces [E143]. The Colorado Air National Guard's 120th Fighter Squadron operates from Buckley and maintains an Aerospace Control Alert mission, while 140th Wing maintenance personnel support the F-16 force [E144-E146].

Those communities create two different movement risks. A sudden surge among missile-warning operators, communications, intelligence, cyber, security, and contractor personnel could signal an anomaly or heightened warning posture. A recurring fighter aircrew and maintenance package may reveal activation of an alert, exercise, or deployment.

The study did not identify a missile-warning crew member, satellite event, fighter pilot, maintainer, aircraft, alert, deployment, contractor, or household. Its one reviewed gate and synthetic routes cannot establish the actual access pattern of the 2nd SWS, 120th Fighter Squadron, or other tenants.

Installation-Specific Intelligence Scenarios

The study demonstrates Tier A deployment and modeled route exposure only. Both scenarios below require Tier B historical time-stamped observations and Tier C identity or organizational enrichment that were not obtained.

Scenario 1: Detecting a 2nd Space Warning Squadron Crisis-Staffing Surge

Assume that a foreign service obtains historical vehicle observations around Buckley and builds a baseline for recurring shift, contractor, security, communications, and mission-partner traffic. The service may not know which vehicles belong to the 2nd Space Warning Squadron, but repeated association with public exercises, shift patterns, and known mission events can narrow the likely cluster [E143].

A high-value signal would be an abnormal convergence outside normal watch turnover. Additional vehicles associated with senior leadership, intelligence, communications, cyber support, security, and technical contractors may arrive and remain for an extended period. The pattern could indicate a missile-warning anomaly, satellite or ground-system problem, major exercise, or heightened strategic watch posture.

The underlying event may remain unknown. Yet early warning that a missile-warning organization has departed from baseline can help an adversary assess U.S. awareness, test whether a deception has been detected, alter missile or satellite behavior, or intensify collection against related commands.

The archive may also identify which technical teams recur across anomalies and which personnel arrive only during high-consequence events. Those individuals may possess knowledge of sensor performance, warning architecture, technical limitations, or response procedures and could become priority counterintelligence targets.

The AP reporting on Iran's traffic-camera compromise provides a direct precedent for converting civilian camera access into sensitive leadership and operational-location intelligence [E141]. The target there was senior Iranian leadership, not missile-warning staff, but the method demonstrates that rare convergence among protected personnel can be extracted from ordinary urban surveillance systems.

The study does not show a warning anomaly or identify a 2nd SWS vehicle. The scenario requires Tier B history, Tier C organizational attribution, and a baseline that accounts for ordinary 24-hour shift work, exercises, contractor schedules, and more than one hundred unrelated mission partners.

Scenario 2: Identifying Activation of the 120th Fighter Squadron's Alert or Deployment Package

Buckley also supports the 120th Fighter Squadron's F-16 mission and a publicly acknowledged 24/7 Aerospace Control Alert role [E144-E146]. A recurring cluster of pilots, maintenance personnel, security forces, operations staff, and support vehicles may become recognizable over time.

A sudden change in that cluster could indicate an alert response, exercise, aircraft deployment, or major readiness event. The service may observe pilots and maintainers arriving outside normal patterns, specialized support converging, and some personnel or vehicles subsequently disappearing from local routines.

The adversary may not know the airborne target or destination. It could still estimate that the alert force has activated, that aircraft have deployed, or that the wing's availability has changed. Correlation with public aviation reporting, exercises, diplomatic events, or regional air activity could narrow the assessment.

Long-term history can also identify the recurring aircrew and maintenance team behind the capability. Their homes, family vehicles, and off-base routines then become accessible for cyber targeting, surveillance, recruitment, or coercion.

Operation Anarchist provides a direct aviation-intelligence precedent. Reporting based on Snowden documents described U.S. and British intelligence intercepting Israeli military drone and fighter-aircraft video feeds to understand operations and possible strike preparations [E142]. The collection medium differs, but the objective is closely related: use external signals to determine when a military aviation capability is active and what it may be preparing to do.

The study did not identify an F-16, pilot, maintainer, alert, or deployment. It models public-road exposure only. The scenario requires historical observations and reliable association with the 120th Fighter Squadron rather than the base's many other tenants.

Combined Significance

Scenario 1 could reveal changes in strategic missile-warning posture. Scenario 2 could reveal activation or movement of a homeland-defense fighter capability. Together they show why Buckley's shared road environment can expose two different national-warning functions through correlated personnel movement.

Primary Reachability Findings

Modeled route-coverage estimate, reported for both scopes with its uncertainty ranges.

Field	5-mile near-base	20-mile primary
Result label	V7 modeled estimate	V7 modeled estimate
Publication status	Modeled estimate (3 caveats)	Modeled estimate (3 caveats)
Headline channel	robust_lattice	robust_lattice
Primary H0 U/C/P/R	23.6%/67.3%/2.9%/6.2%	5.5%/88.6%/2.4%/3.5%
Robust H0/H1/H2 U/C/P/R	21.4%/63.7%/2.7%/12.2%	4.9%/81.1%/2.6%/11.3%
H0 validation	single-reviewer check	single-reviewer check

The complete modeled result record for both scopes - all sensitivity intervals, gate/direction/range sweeps, camera-cluster influence, modeling caveats, seeds, and SHA-256 hashes - is in the V7 Modeled Result Record under Evidence and Reproducibility below.

20-mile minus 5-mile weighted unobserved-rate difference: primary conditional H0 **-18.1** percentage points; separate robust H0/H1/H2 lattice **-16.5** percentage points. These channels answer different questions and are not averaged. [L41]

Legislative Significance

Buckley should be treated as a strategic warning and homeland-defense site. ALPR safeguards should include strict retention and sharing limits, high-threshold historical queries, vendor and subcontractor security reviews, immutable auditing, and immediate notification to Space Force, Air National Guard, NORAD-related, and counterintelligence authorities after compromise. Public findings should not disclose exact watch indicators, gate pressure, or route gaps.

Neither recommendation depends on a claim that a current operator acted improperly. The policy issue is whether a longitudinal commercial movement archive surrounding a sensitive national-security site should be retained, broadly shared, or exposed through vendor and subcontractor systems without controls proportionate to the intelligence value of the aggregate record.

Four Reported Vulnerabilities

Finding	Observed condition	Evidence boundary	Disclosure and remediation status	Source(s)
1	An active ArcGIS Default API key was hardcoded in a public development/demo asset and repeated key material was found across development assets.	The validation establishes key scope and private item grants; it does not prove that every granted item was read or altered by another party.	Reported 2025-06-11; remediation reported 2025-07-01.	L2, L5, L8, L20
2	FlockSafety development application and module-federation bundles were served before the correct authentication boundary.	The bundles expose application logic, routes, models, and permission concepts; frontend visibility does not prove anonymous access to every backend or production record.	Reported 2025-11-13 with follow-ups on 2025-11-14 and 2025-11-19; no closure or remediation detail appears in the disclosure record.	L2, L5, L11-L13
3	Planner/Beefeater endpoints issued ArcGIS and Google mapping credentials before login, including a production-scope path used to obtain the analyzed export.	Wire records prove anonymous HTTP 200 token responses and establish provenance; they do not prove every downstream service permitted every operation.	Reported 2025-11-13 with follow-ups on 2025-11-14 and 2025-11-19; no closure or remediation detail appears in the disclosure record.	L2, L14, L15, L37

Finding	Observed condition	Evidence boundary	Disclosure and remediation status	Source(s)
4	FlockNova application bundles were served before the correct access boundary and revealed search, pivot, fusion, and client-side permission assumptions.	The exposed code establishes application structure and data-source concepts; it does not establish that every modeled backend endpoint lacked authorization or that every modeled dataset was populated.	Reported 2025-12-05; no reply or remediation detail appears in the disclosure record.	L2, L4, L35

The findings are distinct but composable. Findings 2 and 4 exposed the vocabulary and architecture of search, alerting, mapping, and fusion workflows. Findings 1 and 3 exposed two different credential failures: a static production-scoped ArcGIS key and a pre-login credential-issuance path. Finding 3 supplied the provenance for the production map-point export used here. The combination supports a conclusion about systemic credential and environment-boundary weakness during the research period, while remaining narrower than a claim of universal platform compromise [L2, L8, L37].

The disclosure record also cannot establish a negative. Responsible reporting and a known remediation date for Finding 1 do not prove that no other person accessed the exposed surfaces, just as the absence of a returned closure notice for Findings 2 through 4 does not prove that they remain exploitable today. The reports preserve the observed condition, collection date, and known response status so that legal and technical reviewers can distinguish evidence from present-tense assumptions.

Methodology

Research and Data Basis

This assessment follows four separate disclosures involving credentials, development assets, environment boundaries, and a data-fusion application. A public development artifact contained an active ArcGIS credential; other development bundles exposed application structure before the expected access boundary; a Planner/Beefeater path issued production-scope mapping credentials before login; and FlockNova bundles exposed the structure of a broader fusion and search environment [L2, L4, L5, L8, L37]. None of those findings alone proves universal backend access. Together, they justified examining what sensitive geospatial information became available and what defensive questions it could support.

The production ArcGIS export captured on December 14, 2025 contains 335,701 records spanning multiple device types and statuses; it is not a count of simultaneously active cameras. The status fields record 214,073 `inService`, 83,427 `inPlanning`, 38,190 decommissioned, and 11 unknown records. The route study loads detection-eligible `inService` and `inPlanning` records and preserves a separate `inService`-only floor. The `active` integer is not the study filter [L14, L15].

Exposed application materials model plate and vehicle search, camera selection, hit history, alerts, people-search paths, map layers, CAD and AVL concepts, Raven/audio sensors, device access, and identity-adjacent fusion permissions [L4, L11-L13, L35]. Flock's patent describes a dynamic surveillance and object-query architecture, but a patent describes claimed architecture rather than proving deployment of each patented capability [E37]. The report therefore separates observed code and export fields from product descriptions and hypothetical intelligence use.

The force-protection concern arises because personnel assigned to Buckley Space Force Base routinely use civilian roads outside a protected perimeter. National evidence indicates that many service members live in local communities and use civilian housing markets when government quarters are not provided [E44-E46]. Those national facts do not reveal where a person assigned to Buckley Space Force Base lives; they establish only that off-installation movement is a legitimate research surface.

Longitudinal location information can expose associations and patterns that isolated observations do not. Supreme Court decisions concerning long-term GPS tracking and historical location records provide relevant policy and legal context without deciding the legality of this vendor, dataset, or study [E20, E21]. The constitutional and privacy implications belong in legal and policy review, not in unsupported declarations that every collection or search is unlawful.

My analytical judgment is that commercial growth and procurement convenience must not displace United States national-security, counterintelligence, force-protection, constitutional, and public-accountability obligations. That is a normative conclusion, not evidence that profit caused a particular breach or that a specific customer misused data.

Estimand and Synthetic Origins

The V7 primary estimand is the occupied-housing-weighted distribution across unobserved, confirmed exposure, possible exposure, and unresolved model under one predeclared, camera-blind H0 access-and-route policy. H0 defines the pinned origin, eligible unchanged saved gates, 5/20-road-mile frame, final per-leg scope, and primary conditional result. Every in-frame sampled weight remains in the four-class denominator; proven out-of-frame origins are excluded before sampling, while frame-unknown, unresolved-model, and artifact-error states remain explicit.

Each directed outbound and return leg must be no more than the declared radius. A qualifying round trip can therefore approach 10 miles in the 5-mile scope or 40 miles in the 20-mile scope. This is not a total-round-trip cap of 5 or 20 miles.

H1/H2 remain identity-keyed alternative access policies used only for the separate robustness lattice and fixed-H0-gate access sensitivity. H1/H2 cannot rescue a failed H0, set the primary status, change H0 frame membership, or contribute cameras to the H0 result. The two channels are co-located and never averaged [L41].

Reviewed 24/7 Gates

The paired study used Gate 1 as the reviewed gate set. Only gates treated during setup as continuously open to authorized traffic are eligible. A part-time, visitor-only, commercial-only, or schedule-limited gate would create a modeled route that disappears outside its operating window, so including it as continuously available would overstate practical access. The gate decision concerns availability, not secrecy; coordinates and identifiers remain in the unredacted annexes.

The same gate set was used at both radii. The saved study state also contained 0 analyst-defined road blocks. Gates and blocks are inputs rather than outputs. A high or low unobserved rate does not validate the gate review, so an installation reviewer should read the exact saved identifiers and artifact warnings when judging whether the modeled access assumptions match local practice.

Cameras, Roads, and Routing

The V7 route and gate policy receives no camera coordinates, encounter results, or camera-derived costs. It uses the frozen routing and inventory assumptions bound into the completed cohort (`valhalla-3.6.3-auto-frozen-osm-camera-blind-directed-overlay-v6`). Outbound and return routes are legal directed requests and are evaluated independently against the declared per-leg scope.

Camera encounters remain geometry, corridor, bearing, lifecycle-status, and capture-model inferences rather than observed plate reads. The H0 point channel retains direction and spatial/grade sensitivity separately. Camera influence is computed by physical camera cluster so colocated compute/support records are not counted as independent roadside sensors. Planned-device and in-service-only status variants remain sensitivity evidence rather than claims of confirmed real-world operation [L41].

Why Five and Twenty Miles

DoD Manual 4165.63 permits housing-market boundaries based on a twenty-mile or one-hour peak-traffic commute, with military and public information and installation-command input supporting local adjustment [E49]. The study predeclared the distance limb as a uniform, transparent approximation of

the broader off-installation housing and commuting area. It does not assert that most personnel at Buckley Space Force Base live exactly twenty miles away, and it does not model one hour of peak traffic.

Five miles isolates the immediate area where travel converges toward a limited gate set. Twenty miles adds the broader housing-market stratum while retaining every near-base draw unchanged. Reporting both shows whether corridor concentration near the facility differs from the surrounding occupied-housing geography without changing the near-base sample.

Limitations and Non-Claims

This is a model over dated deployment, Census, and road snapshots. Occupied housing is a residential-distribution proxy, not an installation workforce roster; it does not weight origins by military assignment, employer, rank, duty status, shift, or measured traffic. National off-base housing evidence supports the scope choice but cannot identify where personnel assigned to Buckley Space Force Base live [E44-E46].

Camera location and status fields can be incomplete, stale, planned, duplicated, moved, or differently interpreted. OSM roads and address points can omit valid travel or include obsolete topology. Gate availability and cantonment geometry depend on analyst review. The route engine models corridor blocking, accepted alternatives, and a geometric field-of-view capture; it does not model OCR probability, optical obscuration, weather, plate condition, device uptime, data retention, customer sharing, legal process, or whether a backend user queried a record.

A V7 unobserved H0 classification is a conditional modeled-policy result: under the frozen H0 access, gate, routing, inventory-status, and capture rules, the legal directed round trip had no qualifying modeled encounter. It is not a share of people, drivers, commuters, households, actual trips, or empirical camera reads. The separate robust lattice and access, gate-choice, direction, spatial/grade, range, deployment-status, sampling, and camera-cluster sensitivities must remain visible qualifications. Source omissions, device uptime, weather, plate visibility, temporary road conditions, and camera movement can change real-world collection.

Evidence and Reproducibility

The V7 drafting packet was built from the complete validated cohort for `buckley_space_force_base`. It binds cohort `reachability-v7-audit-92bd2e6a45c3a7c6`, pair `buckley_space_force_base-8d41eaa35c596954`, seed `1567282724`, index SHA-256 `3d0755cb6fcc7dd165c6b9dd53ade8bfe5402773231904ea3807d1f17dc3b96b`, five-mile summary SHA-256 `db3bc7740ee4e618bd651d782332831f58a7efcd5cdb4ada928bde78ee1bce71`, and twenty-mile summary SHA-256 `dc2f6a99ace9d94912ac8aac3592e4d34bab4e594cd07abd52eb5ffd5035c44b`. [L41].

Both scopes retain the primary H0 and robust-lattice partitions, full frame accounting, per-policy outcomes and failures, directed route geometry, modeled camera encounters, split uncertainty intervals, gate-choice sensitivity, physical-camera-cluster influence, frozen source snapshot, and independent QA. All QA flags and warnings remain unsuppressed in the hash-bound V7 snapshot [L41].

The narrative is subordinate to those structured artifacts. If a sentence, table cell, or later export conflicts with a canonical summary or origin-level record, the validated structured record controls and the narrative must be corrected. Joshua Michael independently reviews each material claim, citation, inference, and numerical value as the accountable author.

V7 Modeled Result Record

Modeled route-coverage estimate [L41].

Field	5-mile near-base	20-mile primary
Result label	V7 modeled estimate	V7 modeled estimate
Publication status	Modeled estimate (3 caveats)	Modeled estimate (3 caveats)
V7 cohort	reachability-v7-audit-92bd2e6a45c3a7c6	reachability-v7-audit-92bd2e6a45c3a7c6
Pair ID	buckley_space_force_base-8d41eaa35c596954	buckley_space_force_base-8d41eaa35c596954
Pair seed	1567282724	1567282724
Generated at	2026-08-12T08:02:21.650686+00:00	2026-08-12T08:02:21.650686+00:00
Summary SHA-256	db3bc7740ee4e618bd651d782332831f58a7efcd5cdb4ada928bde78ee1bce71	dc2f6a99ace9d94912ac8aac3592e4d34bab4e594cd07abd52eb5ffd5035c44b
Routing engine	valhalla-3.6.3-auto-frozen-osm-camera-blind-directed-overlay-v6	valhalla-3.6.3-auto-frozen-osm-camera-blind-directed-overlay-v6
Synthetic draws	1000	2000
Headline channel	robust_lattice	robust_lattice
Primary H0 U/C/P/R counts	236/673/29/62	271/1583/52/94
Primary H0 U/C/P/R	23.6%/67.3%/2.9%/6.2%	5.5%/88.6%/2.4%/3.5%
Robust H0/H1/H2 U/C/P/R counts	214/637/27/122	245/1468/53/234
Robust H0/H1/H2 U/C/P/R	21.4%/63.7%/2.7%/12.2%	4.9%/81.1%/2.6%/11.3%
Direction H0 interval	23.6% to 32.7%	5.5% to 11.4%
Fixed-gate access interval	21.4% to 33.7%	4.9% to 16.5%
Joint interval	21.4% to 36.3%	4.9% to 18.9%

Field	5-mile near-base	20-mile primary
Spatial H0 interval	20.3% to 29.0%	5.1% to 8.2%
Gate reselection diagnostic	fixed 23.6%; reselected 23.6%; absolute difference 0.0 pp	fixed 5.4%; reselected 5.4%; absolute difference 0.0 pp
H0 gate near-tie sensitivity	60s: 0.0% disagreement weight; 120s: 0.0% disagreement weight; 300s: 0.0% disagreement weight	60s: 0.0% disagreement weight; 120s: 0.0% disagreement weight; 300s: 0.0% disagreement weight
H0 range sensitivity U/C/P/R	75ft: 25.2%/66.6%/2.0%/6.2%; 150ft: 23.6%/67.3%/2.9%/6.2%; 250ft: 23.6%/67.3%/2.9%/6.2%	75ft: 6.9%/88.3%/1.3%/3.5%; 150ft: 5.5%/88.6%/2.4%/3.5%; 250ft: 5.0%/88.6%/2.9%/3.5%
H0 direction sensitivity U/C/P/R	25deg: 25.8%/67.3%/0.7%/6.2%; 30deg: 25.8%/67.3%/0.7%/6.2%; 35deg: 23.6%/67.3%/2.9%/6.2%; 40deg: 23.6%/67.3%/2.9%/6.2%; 45deg: 23.6%/67.3%/2.9%/6.2%; 60deg: 23.6%/67.3%/2.9%/6.2%	25deg: 6.0%/88.6%/1.9%/3.5%; 30deg: 5.9%/88.6%/2.0%/3.5%; 35deg: 5.5%/88.6%/2.4%/3.5%; 40deg: 5.4%/88.6%/2.5%/3.5%; 45deg: 5.4%/88.6%/2.5%/3.5%; 60deg: 5.3%/88.6%/2.6%/3.5%
Deployment-status sensitivity U/C/P/R	declared_policy: 23.6%/67.3%/2.9%/6.2%; in_service_only: 23.6%/67.3%/2.9%/6.2%	declared_policy: 5.5%/88.6%/2.4%/3.5%; in_service_only: 8.7%/86.1%/1.7%/3.5%
Physical-camera-cluster influence	maximum removal shift 3.6 pp; 0 material clusters	maximum removal shift 1.4 pp; 0 material clusters
H0 validation	single-reviewer check	single-reviewer check
Modeling caveats	1. corridor routing is a single-reviewer accuracy check (~89.5%; see the report's Appendix O)2. primary H0 unresolved weight is 6.200%3. fixed-gate access-policy interval spans 12.300 pp	1. corridor routing is a single-reviewer accuracy check (~89.5%; see the report's Appendix O)2. primary H0 unresolved weight is 3.502%3. fixed-gate access-policy interval spans 11.581 pp
QA and artifact warnings	None	None

20-mile minus 5-mile weighted unobserved-rate difference: primary conditional H0 **-18.1** percentage points; separate robust H0/H1/H2 lattice **-16.5** percentage points. These channels answer different questions and are not averaged. [L41]

Reachability Results

Five-Mile Near-Base Scope

Publication state: Modeled estimate (3 caveats).

The 5-mile primary H0 channel contains 1,000 draws on the full in-frame sampled denominator: 236 unobserved (23.6%), 673 confirmed exposure (67.3%), 29 possible exposure (2.9%), 62 unresolved model (6.2%). The separate robust H0/H1/H2 lattice reports 214 unobserved (21.4%), 637 confirmed exposure (63.7%), 27 possible exposure (2.7%), 122 unresolved model (12.2%). Neither channel drops or renormalizes unresolved-model weight.

H0 uncertainty intervals: direction-H0 23.6% to 32.7%; fixed-H0-gate access 21.4% to 33.7%; joint 21.4% to 36.3%; spatial/grade-H0 20.3% to 29.0%. These are distinct sensitivity results and are not averaged. Candidate-frame accounting: `{"all_saved_gates_evaluated": true, "certificate_artifact_path": "frame_classification.json", "certificate_artifact_sha256": "cb3a57a7e2760ef42702adc7ed64afb63dff22e6dc13381e6cdc7dfbbd1befd3", "classifier_contract": "h0-all-saved-gates-directed-per-leg-frame-v1", "classifier_version": 1, "closure": {"count_matches_source": true, "weight_matches_source": true}, "count_by_status": {"frame_unknown": 0, "near": 3268, "outer": 42053, "proven_out_of_frame": 41938}, "per_leg_scope_rule": "outbound_and_return_each_lte_declared_scope_radius", "source_count": 87259, "source_weight": 1053630.999999999, "weight_by_status": {"frame_unknown": 0.0, "near": 56588.333333333336, "outer": 505032.66666666634, "proven_out_of_frame": 492009.9999999995}, "weight_semantics": "pre_sampling_occupied_housing_candidate_weight"}`. Sampled-frame accounting: `{"count_by_status": {"artifact_error": 0, "frame_unknown": 0, "in_frame": 1000, "proven_out_of_frame": 0}, "rate_by_status": {"artifact_error": 0.0, "frame_unknown": 0.0, "in_frame": 100.0, "proven_out_of_frame": 0.0}, "source_count": 1000, "source_weight": 56588.333333333154, "weight_by_status": {"artifact_error": 0.0, "frame_unknown": 0.0, "in_frame": 56588.333333333154, "proven_out_of_frame": 0.0}}`.

Modeling caveats: 1. corridor routing is a single-reviewer accuracy check (~89.5%; see the report's Appendix O)2. primary H0 unresolved weight is 6.200%3. fixed-gate access-policy interval spans 12.300 pp**QA and artifact warnings:** None [L41]

Twenty-Mile Primary Scope

Publication state: Modeled estimate (3 caveats).

The 20-mile primary H0 channel contains 2,000 draws on the full in-frame sampled denominator: 271 unobserved (5.5%), 1,583 confirmed exposure (88.6%), 52 possible exposure (2.4%), 94 unresolved model (3.5%). The separate robust H0/H1/H2 lattice reports 245 unobserved (4.9%), 1,468 confirmed exposure (81.1%), 53 possible exposure (2.6%), 234 unresolved model (11.3%). Neither channel drops or renormalizes unresolved-model weight.

H0 uncertainty intervals: direction-H0 5.5% to 11.4%; fixed-H0-gate access 4.9% to 16.5%; joint 4.9% to 18.9%; spatial/grade-H0 5.1% to 8.2%. These are distinct sensitivity results and are not averaged. Candidate-frame accounting: `{"all_saved_gates_evaluated": true, "certificate_artifact_path": "frame_classification.json", "certificate_artifact_sha256": "cb3a57a7e2760ef42702adc7ed64afb63dff22e6dc13381e6cdc7dfbbd1befd3", "classifier_contract": "h0-all-saved-gates-directed-per-leg-frame-v1", "classifier_version": 1, "closure": {"count_matches_source": true, "weight_matches_source": true}, "count_by_status": {"frame_unknown": 0, "near": 3268, "outer": 42053, "proven_out_of_frame": 41938}, "per_leg_scope_rule": "outbound_and_return_each_lte_declared_scope_radius", "source_count": 87259, "source_weight": 1053630.999999999, "weight_by_status": {"frame_unknown": 0.0, "near": 56588.333333333336, "outer": 505032.66666666634, "proven_out_of_frame": 492009.9999999995}, "weight_semantics": "pre_sampling_occupied_housing_candidate_weight"}`. Sampled-frame accounting: `{"count_by_status": {"artifact_error": 0, "frame_unknown": 0, "in_frame": 2000, "proven_out_of_frame": 0}, "rate_by_status": {"artifact_error": 0.0, "frame_unknown": 0.0, "in_frame": 100.0, "proven_out_of_frame": 0.0}, "source_count": 2000, "source_weight": 561620.9999999993, "weight_by_status": {"artifact_error": 0.0, "frame_unknown": 0.0, "in_frame": 561620.9999999993, "proven_out_of_frame": 0.0}}`.

Modeling caveats: 1. corridor routing is a single-reviewer accuracy check (~89.5%; see the report's Appendix O)2. primary H0 unresolved weight is 3.502%3. fixed-gate access-policy interval spans 11.581 pp**QA and artifact warnings:** None [L41]

Relationship Between the Two Scopes

20-mile minus 5-mile weighted unobserved-rate difference: primary conditional H0 **-18.1** percentage points; separate robust H0/H1/H2 lattice **-16.5** percentage points. These channels answer different questions and are not averaged. Each directed outbound and return leg must independently satisfy its declared 5/20-road-mile scope; the total round trip may approach 10/40 miles. An origin with no unchanged saved gate qualifying under H0 is outside that scope before sampling [L41].

References

ID	Source and use in this report
E20	U.S. Supreme Court, Carpenter v. United States opinion, https://www.supremecourt.gov/opinions/17pdf/16-402_h315.pdf - Digital location privacy policy/legal context.

ID	Source and use in this report
E21	Library of Congress, United States v. Jones, 565 U.S. 400, https://www.loc.gov/item/usrep565400/ - GPS tracking/location surveillance policy/legal context.
E37	Flock Group Inc., U.S. Patent No. 11,416,545 B1, “System and Method for Object-Based Query of Video Content Captured by a Dynamic Surveillance Network,” issued Aug. 16, 2022, https://patents.google.com/patent/US11416545B1/en - Flock’s own patent. Confirmed language: a “dynamic surveillance network” that is device-agnostic and ingests video from “unrelated surveillance devices” (neighborhood, residential, business, traffic, portable/mobile cameras); a “dynamic surveillance and object-based query” (DSOQ) server/system; object-based query of video “based on content of the video footage and not just time and location”; attribute profiling of people (“male, female, race,” height/weight/clothing) and vehicles (make/model/color/plate); and “face recognition data points”/facial-similarity feature-vector matching. Used only for the vendor’s own described architecture and intended capability; the report does not claim Flock has deployed any specific patented function, including facial recognition. Accessed 2026-07-13.
E44	U.S. Government Accountability Office, *Military Housing: DOD Should Address Critical Supply Shortages* (GAO-25-106208), product page, https://www.gao.gov/products/gao-25-106208 - GAO summary states that about **two-thirds of service members in the U.S. live off base in local communities**. Used for national off-base housing share context for force-protection commute exposure. Not an installation-level census. Accessed 2026-07-16.
E45	Congressional Research Service, *Military Housing* (CRS Report R47728), https://www.congress.gov/crs-product/R47728 - CRS reports that about **58% of servicemembers** receive a tax-free housing allowance (BAH) and obtain housing from the local housing market outside their installation. Complements E44 (slightly different metric: BAH recipients vs “live off base”). Used for off-base housing / civilian-market commute framing. Accessed 2026-07-16.
E46	DoD Travel Management Office / Defense Travel Management Office, Basic Allowance for Housing overview, https://www.travel.dod.mil/Allowances/Basic-allowance-for-Housing/ - Official BAH framing: compensation based on local civilian housing markets when government quarters are not provided; members choose off-base housing in the civilian market. Used only for policy mechanism (BAH → civilian infrastructure), not for a percentage. Accessed 2026-07-16.

ID	Source and use in this report
E49	U.S. Department of Defense, DoD Manual 4165.63, *DoD Housing Management*, incorporating Change 3, April 1, 2025, Enclosure 3, section 1.c.(2), https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodm/416563m.pdf - Official housing-market-analysis guidance: market-area boundaries may use a 20-mile or one-hour peak-traffic commute, with military/public information and installation-command recommendations supporting local adjustment. Used to justify a predeclared 20-road-mile primary reachability scope, not to claim that most personnel at a particular installation live within that distance. Accessed 2026-07-20.
E50	U.S. Space Force, Buckley Space Force Base, “Space Base Delta 2” fact sheet, https://www.buckley.spaceforce.mil/About-Us/Fact-Sheets/Display/Article/322399/space-base-delta-2/ - Official Buckley mission and population context: installation support for space-based missile warning, space surveillance, space communications, resident air operations, and more than 110 mission partners; published personnel categories are used only as installation-level context. Accessed 2026-07-21.
E51	U.S. Space Force, Buckley Space Force Base, *Stormwater Management Plan, Revision 2*, April 2025, https://www.buckley.spaceforce.mil/Portals/13/documents/Environmental/Final%20BSFB%20SWMP%20Revision%202%20April%202025.pdf?ver=Q_QI3YgoVtwRDzRlfYzwLA%3D%3D - Official installation document describing Buckley mission support for uninterrupted missile warning, intelligence, and cyber operations. Used only for public mission context, not operational schedules or classified functions. Accessed 2026-07-21.
E141	Associated Press via PBS NewsHour, “Iran built a vast camera network to control dissent. Israel used it to track targets, AP sources say,” March 23, 2026, https://www.pbs.org/newshour/world/iran-built-a-vast-camera-network-to-control-dissent-israel-used-it-to-track-targets-ap-sources-say - Reported precedent for state exploitation of street and traffic cameras to map senior officials, protective personnel, routes, parking locations, and meetings. Accessed 2026-08-08.
E142	The Guardian, “Snowden files reveal US and UK spied on feeds from Israeli drones and jets,” January 29, 2016, https://www.theguardian.com/world/2016/jan/29/snowden-files-us-uk-spied-feeds-israeli-drones-jets - Reported Operation Anarchist precedent for U.S.-British interception and analysis of Israeli military-drone and aircraft video feeds to understand operations and possible strike preparations. Accessed 2026-08-08.

ID	Source and use in this report
E143	U.S. Space Force, “2nd Space Warning Squadron,” https://www.spaceforce.mil/About-Us/Fact-Sheets/Fact-Sheet-Display/Article/3687888/2nd-space-warning-squadron/ - Official mission description for global space-based missile warning at Buckley Space Force Base. Accessed 2026-08-08.
E144	140th Wing, “120th Fighter Squadron,” https://www.140wg.ang.af.mil/About-Us/Fact-Sheets/Display/Article/444233/120th-fighter-squadron/ - Official public context for the squadron’s 24/7 Aerospace Control Alert mission at Buckley. Accessed 2026-08-08.
E145	140th Wing, “140th Maintenance Group,” https://www.140wg.ang.af.mil/About-Us/Fact-Sheets/Display/Article/444223/140th-maintenance-group-mxg/ - Official description of specialized F-16 maintenance functions at Buckley. Accessed 2026-08-08.
E146	140th Wing, “140th Operations Group,” https://www.140wg.ang.af.mil/About-Us/Fact-Sheets/Display/Article/444232/140th-operations-group-og/ - Official confirmation of the 120th Fighter Squadron’s responsibility for the F-16 mission. Accessed 2026-08-08.
L2	`Supporting Tools and Docs/supporting_memoranda/FlockSafety_Four_Vulnerability_Chain.md` ; `Supporting Tools and Docs/supporting_documents/finding_cards/Finding_01_…` – `Finding_04_…` ; source-evidence: `Raw Evidence/Documentation/My_Four_Vulnerabilities.md` - Vulnerability timeline, Cure53-style finding cards, chain framing, remediation status.
L4	`Supporting Tools and Docs/supporting_documents/analyses/FlockNova_Application_Capability_Enumeration.md` - Nova search, access-control, and client-side enforcement-gap findings.
L5	`Supporting Tools and Docs/supporting_documents/analyses/FlockSafety_Dev_Subdomain_Bundle_Enumeration.md` - 370-host headline footprint, dev bundle families, and repeated-key evidence.
L8	`Raw Evidence/FlockSafety/flock_hardcoded_api_check.json` - Primary validation artifact for key scope and 50 item grants.

ID	Source and use in this report
L11	`Supporting Tools and Docs/supporting_documents/analyses/ArcGIS_Search_App_Data.md` - Search app data model, people-search device pool, plate/vehicle/search workflows.
L12	`Supporting Tools and Docs/supporting_documents/analyses/ArcGIS_Hotlist_App_Data.md` - Hotlist, alerts, hit history, and alerting data model.
L13	`Supporting Tools and Docs/supporting_documents/analyses/ArcGIS_Mapped_Attributes.md` - FlockOS/map layers and attributes; CAD/AVL, patrol/mobile, body-camera, drone, Raven/audio, and Flock911 surfaces; Flock911 incident-layer state, audio/transcript token classes, per-word start/end timing, selected-event state, and playback/scrub controls.
L14	`Raw Evidence/ArcGIS/flocksafety_prod_arcgis_data/analysis_summary.json`; source dump: `Raw Evidence/ArcGIS/flocksafety_prod_arcgis_data/features_*.json` - 2025-12-14 ArcGIS export summary: 335,701 records, status/device-family counts from the package feature dump.
L15	`Raw Evidence/ArcGIS/flocksafety_prod_arcgis_data/count_verification.json` - Field verification: total/status breakdown; `active=1` (214,233) vs `status=inService` (214,073) split; confirms scale claims use `status`, not `active`.
L20	`Raw Evidence/Documentation/My_Four_Vulnerabilities.md`; P1 - Repository disclosure record and published article for my 53-exposure research, Finding 1 scope analysis, and public ArcGIS corroboration method.
L35	`Raw Evidence/Screenshots/permissions_dronetoo.png`; `Raw Evidence/FlockNova/nova_flockdemo_com/js/nova_flockdemo_com_App.js` - Permission vocabulary including `canCaravanSearch`, Aerodome access, device tunnels, AVL sharing, nationwide lookup, and ArcGIS sign-in.
L37	`Raw Evidence/FlockSafety/dev_app_flocksafety_com/dev-beefeater`; `Raw Evidence/FlockSafety/dev_app_flocksafety_com/prod-beefeater` - Burp XML wire records for Finding 3: anonymous GETs to Beefeater `/api/v1/token/esri` and `/token/google` returning HTTP 200 with tokens; no cookie/authorization.

ID	Source and use in this report
L40	Superseded earlier detailed run; the full per-origin paired study records are retained by the researcher offline for authorized review and are not shipped in this package. - The granular per-origin records (synthetic origins, gates, blocks, selected and attempted routes, blocked-camera observations, outcome records, seeds, and summary hashes) come from an earlier method run. They were removed from the shipped package because they were superseded by the V7 run and contain exact per-origin routes near the installations. The canonical V7 route-coverage estimates and their SHA-256 summary bindings are in L41 and control any transcription conflict.
L41	Complete V7 snapshot and staged cohort `reachability-v7-audit-92bd2e6a45c3a7c6` (index SHA-256 `3d0755cb6fcc7dd165c6b9dd53ade8bfe5402773231904ea3807d1f17dc3b96b`); primary conditional H0 and robust H0/H1/H2 results, methodology, frame accounting, split uncertainty, QA flags and warnings, hashes, and annexes. Canonical source: the hash-bound V7 snapshot at `../Supporting Tools and Docs/project_support/planning_and_qa/reachability_v7_audit_development_snapshot.json`.

Per-site records

The V7 result for this installation - primary conditional H0 and robust H0/H1/H2 outcomes, frame accounting, uncertainty intervals, QA flags, seeds, and SHA-256 summary bindings - is recorded in the hash-bound V7 snapshot [L41]. The large per-origin staging artifacts (route geometry, frame classification, review packets) are not shipped in this package; the full records are retained by the researcher offline for authorized review [L40].