

Camp Pendleton

National Security Exposure Assessment

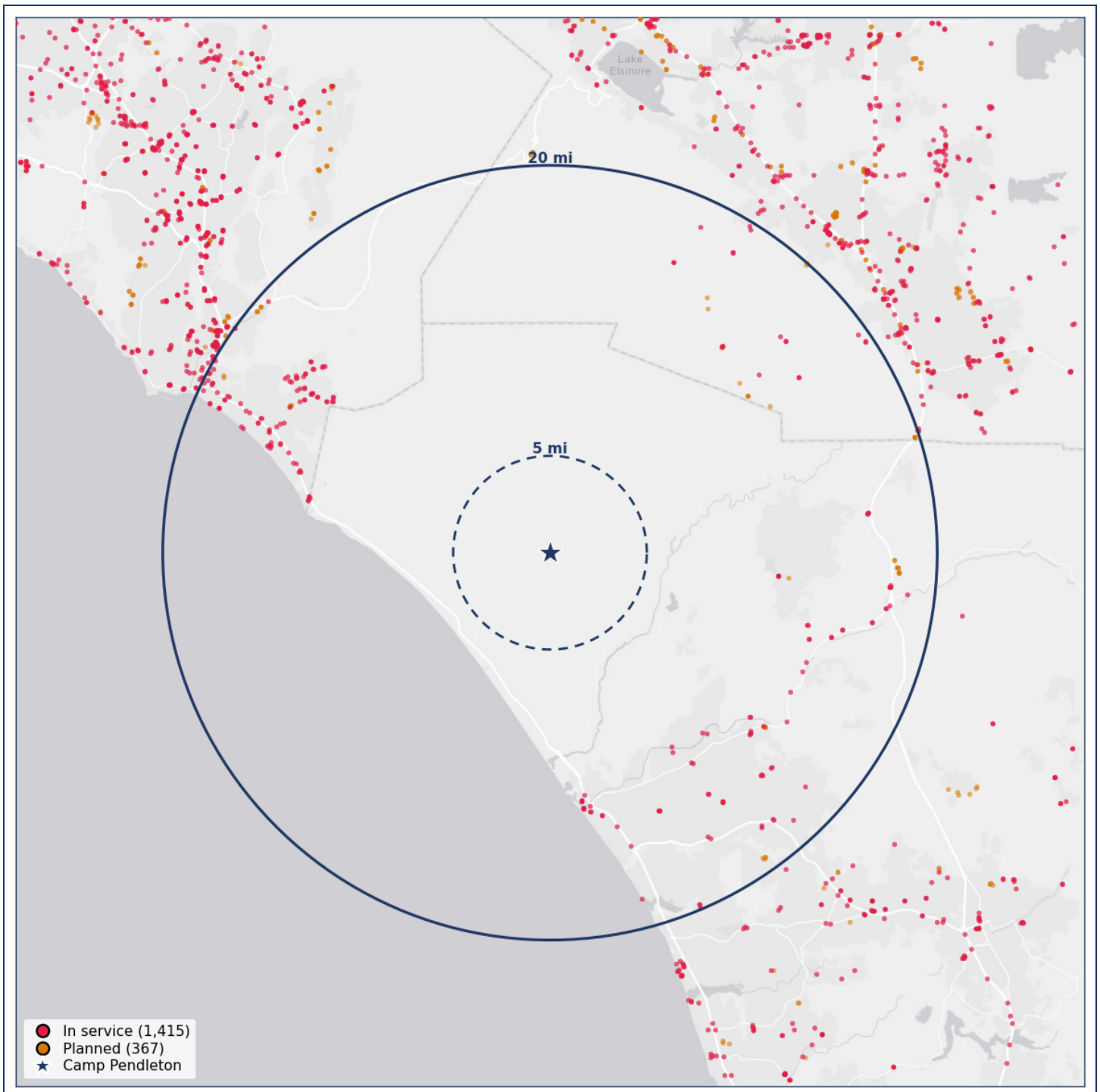
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Executive Assessment

Camp Pendleton is the Marine Corps' main West Coast expeditionary base — I Marine Expeditionary Force, the 1st Marine Division, and the 1st Marine Raider Battalion all work from here. A small, repeating cluster of vehicles tied to the Raiders going dark together is one way a special-operations package leaving town could show up on nearby cameras.

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 54.8% of those modeled trips pass a camera. Another 30.4% might pass one, 4.8% avoid them, and 10.0% could not be determined. Closer in, at 5 miles, only 28.3% have a confirmed camera on every road — a large share stay in “might pass” because the camera’s facing could not be confirmed. This is a model of routes, not proof that anyone was watched.

HEADLINE RESULT · MODELED TRIPS TO A GATE

20 MILES OUT

■ **54.8%****Passes a camera**

A confirmed camera sits on every plausible road to a gate.

■ **30.4%****Might pass**

The inventory's rotationAngle is not a true facing: among 72,971 named in-service cameras it matches the road only about 10% of the time (median error 90°) because it stores housing orientation, not travel. The model therefore does not use it to confirm a hit. Named NB/SB/EB/WB cameras take direction from the road, with the name used only to pick which way they watch. Cameras with no compass name are too noisy to confirm, so a nearby pass stays Might pass. A confirmed hit still needs the vehicle on the same corridor, traveling in that monitored direction within 35°.

■ **4.8%****Avoids all cameras**

No confirmed camera on any plausible road.

■ **10.0%****Couldn't determine**

No complete legal route to a reviewed gate could be established for these trips.

5 MILES OUT

■ **58.3%** Passes ■ **29.2%** Might pass ■ **32.8%** Avoids ■ **9.7%** Couldn't determine

Might pass is 29.2% here because rotationAngle is not a reliable facing, so unnamed or poorly oriented cameras stay in this bucket instead of counting as a hit.

Installation Context

Camp Pendleton is the Marine Corps' largest West Coast expeditionary training facility and hosts I Marine Expeditionary Force, the 1st Marine Division, 1st Marine Logistics Group, Marine Aircraft Group 39, and numerous tenant and support organizations [E52, E53]. Official MARSOC sources identify the 1st Marine Raider Battalion at Camp Pendleton and describe Marine Raiders as scalable expeditionary forces supporting U.S. Special Operations Command [E151, E152].

Those missions create two distinct signatures. A large I MEF or division deployment requires a broad preparation pattern involving maneuver, aviation, logistics, medical, communications, and command communities. A 1st Marine Raider Battalion element is much smaller, but its recurring operators and support specialists may become visible through coordinated movement and absence.

The study addresses public-road approaches to five reviewed gates, not movement inside the installation's vast training reservation. It did not identify a Marine, Raider, unit, deployment, contractor, household, or exercise, and the synthetic routes do not establish which gate any real organization uses.

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 I MEF or 1st Marine Division Deployment Preparation

Assume that a foreign service obtains a long history of vehicle observations around Camp Pendleton and establishes baselines for recurring maneuver, aviation, logistics, communications, medical, and command-support populations. Public exercises and deployments can provide examples for learning how those populations change before a major movement.

A deployment signature may begin with extended maintenance and logistics shifts, increased headquarters activity, additional transportation and contractor presence, and a rise in aviation-support attendance. A large subset of the normal unit population may then disappear while family, rear-detachment, and installation-support patterns remain.

The adversary might not know the destination or operation. It could still estimate when an I MEF or division element entered final preparation, the approximate scale and capability mix, when the force left, and when it returned. Correlation with amphibious shipping, military air activity, exercises, diplomatic developments, or overseas crises could narrow the likely mission.

The installation's size does not eliminate the risk. A nationwide or regional archive allows the analyst to follow recurring vehicles before they reach the gate and to compare multiple approach corridors over time. Repetition can separate a general training surge from a real deployment sequence.

The GRU Unit 26165 campaign provides a direct precedent. Partner governments reported Russian military intelligence targeting internet-connected cameras near military installations and logistics routes to track aid movement [E148]. The collection demonstrates that a state will use distributed civilian sensors to infer military logistics and timing without obtaining operational orders.

The present study does not show an I MEF or 1st Marine Division deployment. It models Tier A route exposure only. The scenario requires historical observations, organizational attribution, and validation of which reviewed gates and roads serve the relevant unit populations.

Scenario 2: Identifying a 1st Marine Raider Battalion Mission Package and Support Network

The 1st Marine Raider Battalion presents a higher-value but smaller target. MARSOC publicly identifies the battalion at Camp Pendleton and describes task-organized support involving intelligence, logistics, communications, fires, and other specialized functions [E151-E153].

A foreign service could use recurring plate co-occurrence to isolate vehicles that appear together during specialized training, overlap with Raider support personnel, and disappear during the same periods. The resulting cluster may reveal probable operators, intelligence specialists, communicators, logisticians, medical personnel, or leaders belonging to one mission package.

The coordinated absence could provide deployment warning, while reappearance could indicate return. More importantly, the identified people could become priority targets for cyber collection, surveillance, recruitment, coercion, or device theft. Their households may reveal deployment absences and routine locations away from military security.

The 2015 OPM breach provides a direct precedent for foreign collection against cleared U.S. personnel. GAO documented compromise of sensitive background-investigation records affecting 21.5 million people, and the FBI has attributed the theft to Chinese actors [E149, E150]. Those records could identify personnel and vulnerabilities; ALPR history could add current unit association, movement, and household context.

The combination reduces uncertainty. An OPM-type dataset may show that a person has sensitive access, while long-term plate association may indicate that the person currently belongs to a Raider support cluster preparing for or returning from a mission.

The study did not access MARSOC rosters, clearance records, registration data, or historical reads and did not identify a Raider. The scenario is a defensive explanation of how ordinary commuting can undermine compartmentation when persistent movement records are joined to identity data.

Combined Significance

The I MEF scenario exposes large-scale expeditionary readiness and force movement. The Raider scenario exposes a small special-operations package and the individuals supporting it. Together they demonstrate how the same civilian sensor network can reveal both mass mobilization and highly compartmented teams.

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 (4 caveats)	Modeled estimate (3 caveats)
Headline channel	robust_lattice	robust_lattice
Primary H0 U/C/P/R	34.1%/30.6%/30.0%/5.3%	4.9%/58.7%/32.3%/4.0%
Robust H0/H1/H2 U/C/P/R	32.8%/28.3%/29.2%/9.7%	4.8%/54.8%/30.4%/10.0%
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 **-29.2** percentage points; separate robust H0/H1/H2 lattice **-28.0** percentage points. These channels answer different questions and are not averaged. [L41]

Legislative Significance

Camp Pendleton requires safeguards tailored to both large deployments and small special-operations communities. Legislators should restrict non-hit retention, reverse-location searches, bulk exports, vendor access, and nationwide sharing; require independent security testing and immutable auditing; and mandate prompt Marine Corps and counterintelligence notification after compromise. Public reporting should avoid exact gate or route avoidance information.

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
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 Camp Pendleton 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 Camp Pendleton 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, Gate 2, Gate 3, Gate 4, and Gate 5 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 Camp Pendleton 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 Camp Pendleton 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 `camp_pendleton`. It binds cohort `reachability-v7-audit-92bd2e6a45c3a7c6`, pair `camp_pendleton-0e6cc18611ee430e`, seed `3268885859`, index SHA-256 `3d0755cb6fcc7dd165c6b9dd53ade8bfe5402773231904ea3807d1f17dc3b96b`, five-mile summary SHA-256 `6429bfc0df0eba25e2d8f9efb12ac4208c96194e5d73ecad007683da7cb51aa6`, and twenty-mile summary SHA-256 `54ce229ad141a872281a0482e779a411de0e6803634c58c2151f0be50f48d4ad`. [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 (4 caveats)	Modeled estimate (3 caveats)

Field	5-mile near-base	20-mile primary
V7 cohort	reachability-v7-audit-92bd2e6a45c3a7c6	reachability-v7-audit-92bd2e6a45c3a7c6
Pair ID	camp_pendleton-0e6cc18611ee430e	camp_pendleton-0e6cc18611ee430e
Pair seed	3268885859	3268885859
Generated at	2026-08-12T09:13:50.789863+00:00	2026-08-12T09:13:50.789863+00:00
Summary SHA-256	6429bfc0df0eba25e2d8f9efb12ac4208c9 6194e5d73ecad007683da7cb51aa6	54ce229ad141a872281a0482e779a411d e0e6803634c58c2151f0be50f48d4ad
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	341/306/300/53	346/936/627/91
Primary H0 U/C/P/R	34.1%/30.6%/30.0%/5.3%	4.9%/58.7%/32.3%/4.0%
Robust H0/H1/H2 U/C/P/R counts	328/283/292/97	333/871/598/198
Robust H0/H1/H2 U/C/P/R	32.8%/28.3%/29.2%/9.7%	4.8%/54.8%/30.4%/10.0%
Direction H0 interval	34.1% to 69.4%	4.9% to 41.3%
Fixed-gate access interval	32.8% to 42.9%	4.8% to 14.9%
Joint interval	32.8% to 71.7%	4.8% to 45.2%
Spatial H0 interval	31.7% to 39.4%	4.6% to 8.6%
Gate reselection diagnostic	fixed 33.5%; reselected 33.5%; absolute difference 0.0 pp	fixed 4.9%; reselected 4.9%; 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: 1.9% disagreement weight; 120s: 3.1% disagreement weight; 300s: 10.1% disagreement weight
H0 range sensitivity U/C/P/R	75ft: 34.1%/30.3%/30.3%/5.3%; 150ft: 34.1%/30.6%/30.0%/5.3%; 250ft: 34.1%/ 30.6%/30.0%/5.3%	75ft: 5.9%/58.3%/31.9%/4.0%; 150ft: 4.9%/58.7%/32.3%/4.0%; 250ft: 4.9%/ 58.8%/32.3%/4.0%
H0 direction sensitivity U/C/P/R	25deg: 34.1%/30.6%/30.0%/5.3%; 30deg: 34.1%/30.6%/30.0%/5.3%; 35deg: 34.1%/30.6%/30.0%/5.3%; 40deg: 34.1%/30.6%/30.0%/5.3%; 45deg: 34.1%/30.6%/30.0%/5.3%; 60deg: 34.1%/30.6%/30.0%/5.3%	25deg: 5.9%/58.7%/31.4%/4.0%; 30deg: 4.9%/58.7%/32.3%/4.0%; 35deg: 4.9%/ 58.7%/32.3%/4.0%; 40deg: 4.9%/58.7%/ 32.3%/4.0%; 45deg: 4.9%/58.7%/32.3%/ 4.0%; 60deg: 4.8%/58.7%/32.4%/4.0%

Field	5-mile near-base	20-mile primary
Deployment-status sensitivity U/C/P/R	declared_policy: 34.1%/30.6%/30.0%/5.3%; in_service_only: 34.1%/30.6%/30.0%/5.3%	declared_policy: 4.9%/58.7%/32.3%/4.0%; in_service_only: 5.2%/58.5%/32.3%/4.0%
Physical-camera-cluster influence	maximum removal shift 13.2 pp; 2 material clusters	maximum removal shift 2.8 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 5.300%3. fixed-gate access-policy interval spans 10.100 pp4. one or more physical camera clusters exceed the influence materiality limit	1. corridor routing is a single-reviewer accuracy check (~89.5%; see the report's Appendix O)2. primary H0 unresolved weight is 3.998%3. fixed-gate access-policy interval spans 10.187 pp
QA and artifact warnings	None	None

20-mile minus 5-mile weighted unobserved-rate difference: primary conditional H0 **-29.2** percentage points; separate robust H0/H1/H2 lattice **-28.0** percentage points. These channels answer different questions and are not averaged. [L41]

Reachability Results

Five-Mile Near-Base Scope

Publication state: Modeled estimate (4 caveats).

The 5-mile primary H0 channel contains 1,000 draws on the full in-frame sampled denominator: 341 unobserved (34.1%), 306 confirmed exposure (30.6%), 300 possible exposure (30.0%), 53 unresolved model (5.3%). The separate robust H0/H1/H2 lattice reports 328 unobserved (32.8%), 283 confirmed exposure (28.3%), 292 possible exposure (29.2%), 97 unresolved model (9.7%). Neither channel drops or renormalizes unresolved-model weight.

H0 uncertainty intervals: direction-H0 34.1% to 69.4%; fixed-H0-gate access 32.8% to 42.9%; joint 32.8% to 71.7%; spatial/grade-H0 31.7% to 39.4%. 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": "4afdb77e89b9aa4cf85c6eed0a1279926a97db3f3eb52627300ae09583db0a48", "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": 2, "near": 2183, "outer": 13273, "proven_out_of_frame": 19144},

```
"per_leg_scope_rule": "outbound_and_return_each_lte_declared_scope_radius", "source_count":
34602, "source_weight": 853432.0000000001, "weight_by_status": {"frame_unknown": 2.0, "near":
53515.500000000015, "outer": 351984.25, "proven_out_of_frame": 447930.25000000006},
"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":
53515.500000000089, "weight_by_status": {"artifact_error": 0.0, "frame_unknown": 0.0, "in_frame":
53515.500000000089, "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 5.300% 3. fixed-gate access-policy interval spans 10.100 pp 4. one or more physical camera clusters exceed the influence materiality limit **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: 346 unobserved (4.9%), 936 confirmed exposure (58.7%), 627 possible exposure (32.3%), 91 unresolved model (4.0%). The separate robust H0/H1/H2 lattice reports 333 unobserved (4.8%), 871 confirmed exposure (54.8%), 598 possible exposure (30.4%), 198 unresolved model (10.0%). Neither channel drops or renormalizes unresolved-model weight.

H0 uncertainty intervals: direction-H0 4.9% to 41.3%; fixed-H0-gate access 4.8% to 14.9%; joint 4.8% to 45.2%; spatial/grade-H0 4.6% to 8.6%. 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":
"4afdb77e89b9aa4cf85c6eed0a1279926a97db3f3eb52627300ae09583db0a48", "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": 2, "near": 2183, "outer": 13273, "proven_out_of_frame": 19144},
"per_leg_scope_rule": "outbound_and_return_each_lte_declared_scope_radius", "source_count":
34602, "source_weight": 853432.0000000001, "weight_by_status": {"frame_unknown": 2.0, "near":
53515.500000000015, "outer": 351984.25, "proven_out_of_frame": 447930.25000000006},
"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": 405499.74999999947, "weight_by_status": {"artifact_error": 0.0, "frame_unknown": 0.0, "in_frame": 405499.74999999947, "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 3.998% 3. fixed-gate access-policy interval spans 10.187 pp **QA and artifact warnings:** None [L41]

Relationship Between the Two Scopes

20-mile minus 5-mile weighted unobserved-rate difference: primary conditional H0 **-29.2** percentage points; separate robust H0/H1/H2 lattice **-28.0** 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, <i>Carpenter v. United States</i> opinion, https://www.supremecourt.gov/opinions/17pdf/16-402_h315.pdf - Digital location privacy policy/legal context.
E21	Library of Congress, <i>United States v. Jones</i> , 565 U.S. 400, https://www.loc.gov/item/usrep565400/ - GPS tracking/location surveillance policy/legal context.

ID	Source and use in this report
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, <i>Military Housing: DOD Should Address Critical Supply Shortages</i> (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, <i>Military Housing</i> (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, <i>DoD Housing Management</i>, 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.
E52	U.S. Marine Corps, Marine Corps Base Camp Pendleton, "About the Base," https://www.pendleton.marines.mil/About/Base-Information/About-the-Base/ - Official description of Camp Pendleton as the Marine Corps' largest West Coast expeditionary training facility, its terrain, training role, and publicly named major commands and tenant organizations. Accessed 2026-07-21.
E53	U.S. Marine Corps, Marine Corps Base Camp Pendleton, "Welcome Aboard," https://www.pendleton.marines.mil/Base-Info/Welcome-Aboard/ - Official installation context identifying the major resident commands and reporting that approximately 70,000 people work and live aboard the base. Used as a dated public population statement, not a commute census. Accessed 2026-07-21.
E148	United Kingdom National Cyber Security Centre, "UK and allies expose Russian intelligence campaign targeting western logistics and technology organisations," May 21, 2025, https://www.ncsc.gov.uk/news/uk-partners-expose-russian-intelligence-campaign - Joint-government attribution that GRU Unit 26165 targeted logistics and transportation organizations and internet-connected cameras near military installations and border crossings to monitor and track aid shipments. Accessed 2026-08-08.
E149	U.S. Government Accountability Office, <i>Information Security: OPM Has Improved Controls, but Further Efforts Are Needed</i> (GAO-17-614), August 3, 2017, https://www.gao.gov/products/gao-17-614 - Official account that the 2015 OPM breaches affected 21.5 million individuals and involved sensitive personnel and security-clearance-investigation information. Accessed 2026-08-08.

ID	Source and use in this report
E150	Federal Bureau of Investigation, "The Threat Posed by the Chinese Government and the Chinese Communist Party to the Economic and National Security of the United States," July 7, 2020, https://www.fbi.gov/news/speeches-and-testimony/the-threat-posed-by-the-chinese-government-and-the-chinese-communist-party-to-the-economic-and-national-security-of-the-united-states - FBI attribution and counterintelligence context for Chinese theft of OPM and other large U.S. personal-data repositories. Accessed 2026-08-08.
E151	Marine Forces Special Operations Command, "1st Marine Raider Battalion," https://www.marsoc.marines.mil/Units/1st-Marine-Raider-Battalion/ - Official confirmation that 1st Marine Raider Battalion is headquartered at Camp Pendleton. Accessed 2026-08-08.
E152	Marine Forces Special Operations Command, "About," https://www.marsoc.marines.mil/About/ - Official mission description for scalable expeditionary Marine Raider forces supporting U.S. Special Operations Command. Accessed 2026-08-08.
E153	Marine Forces Special Operations Command, "1st Marine Raider Support Battalion," https://www.marsoc.marines.mil/Units/1st-Marine-Raider-Support-Battalion/ - Official mission context for intelligence, logistics, communications, fires, and other task-organized support to Marine special operations forces. 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.

ID	Source and use in this report
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.
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 .

ID	Source and use in this report
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.
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].