

NORAD's Surveillance Capabilities and Responsiveness Are Sound: It's Our National Security Team That Needs a Makeover

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KEY TAKEAWAYS

U.S. authorities knew of the Chinese spy balloon's capabilities and tracked it from launch through its intercept by U.S. fighters off the coast of Alaska.

The President and Secretary of Defense had the authority to destroy the balloon but did not authorize its destruction until the balloon had completed its mission.

It was not the military, but the highest echelons of our government that failed to protect North America last January, and it is there that changes must be made.

The large, highly sophisticated Chinese spy balloon that drifted across the United States, collecting intelligence on some of the most sensitive locations in the country, did not sneak up on anyone. U.S. assets tracked the balloon from the time it was launched from the People's Republic of China (PRC) until it entered North American Aerospace Defense Command (NORAD) airspace off the coast of Alaska,¹ where it was intercepted by U.S. fighter aircraft. The threat these systems pose is known throughout the Department of Defense as well as by the National Security Agency (NSA)² that supports it, and the balloon should have been destroyed before it entered North American airspace.

Unfortunately, the authority to shoot it down rested with the President and Secretary of Defense,

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neither of whom even acknowledged NORAD's threat notification until three days after the balloon was first intercepted in U.S. airspace. Even then, they would not authorize the balloon's destruction until that spy craft's mission across the U.S. was accomplished. NORAD's systems and faculties are sound, but the execution of its mission to protect American airspace is hobbled by leaders at the highest echelons of our government. It is there that change needs to take place before even more serious threats arise.

Detection, Tracking, and Intercept Capabilities

NORAD's mission is to conduct airspace warning and ensure the air sovereignty of North America by detecting, intercepting, and, if necessary, engaging air threats to Canada and the United States.³ It uses a so-called systems-of-systems approach to detect and engage threats before they reach North America. "System-of-systems" is a military catchphrase that refers to overlapping technologies that when networked together add up to a capability the sum of which is greater than its parts.

Because of the U.S. focus on efficiencies, rarely do all of those systems reside in the same agency or department, and that is particularly true for NORAD's mission. NORAD has a vast array of radars that cover the northern reaches of the North American continent, but it relies on signals intelligence (SIGINT) from the National Security Agency (NSA) and spaceborne detection and tracking executed by U.S. Space Command (SPACECOM) and the National Reconnaissance Office (NRO) to cue those radars for specific threats, such as high-altitude balloons.⁴

U.S. agencies have been aware of China's balloon surveillance program for years, and U.S. spaceborne SIGINT tracks these reconnaissance platforms from launch through the end of their viable lives, collecting data on the balloons' nearly continual satellite communications (SATCOM) with their controlling agency back in China. The spy balloon in question was tracked from the time it was launched through the time NORAD acquired it off the coast of Alaska on January 28, 2023.⁵ In testimony before the Senate Armed Services Committee in March 2023, NORAD Commander General Glen VanHerck stated that his Alaska-based radars detected the balloon on January 28,⁶ but a series of statements by the Biden Administration in the weeks surrounding the balloon's downing introduced doubt about NORAD's threat detection capabilities.⁷

NORAD's Terrestrial-Based Detection and Tracking System

The U.S. and Canada maintain an array of space-based and terrestrial-based sensors that collectively can detect and provide advanced warning of approaches to the North American continent by intercontinental ballistic missiles (ICBMs), non-stealth bombers and fighters, strategic reconnaissance aircraft, and reconnaissance balloons.

During the Cold War, NORAD had three different lines of land-based radars that covered the breadth of Alaska and Canada: the Distant Early Warning (DEW) Line, Mid-Canada Line, and the PINETREE Line. These three lines of sensors allowed NORAD to detect threats as they approached the continent and then track them as they moved southward through Canadian airspace. After the Soviet Union collapsed, NORAD kept and updated its outermost band of sensors (the DEW line) but decommissioned or ceded control of radar sites inside of Canada to local authorities. What remained allowed NORAD to detect traditional threats before they reached NORAD airspace, but with the loss of the second and third radar lines, tracking of potential threats (such as balloons) launched from within Canada or Alaska became somewhat problematic.

Today, the northern approach to Canada and the United States is covered by a series of 11 long-range and 36 short-range radars, known as the North Warning System, that lie along the entire Arctic coast of North America. Stretching from Alaska across Canada to Greenland, these 47 radars provide seamless radar coverage that is 2,880 nautical miles (NMs) long and 192 NMs wide, allowing NORAD to detect any conventional threat approaching from the air.⁸

The lower 48 states are covered by a network of 117 Joint Surveillance System (JSS) radars,⁹ 45 of which are positioned along the border/coastline of the U.S.¹⁰ and deliver continuing domain awareness to NORAD. The remaining 72 (internal) radars can be tapped to support presidential missions or to track threats that have penetrated the interior.¹¹

These radars are fused together at NORAD's regional air defense sectors, allowing each to focus assets and/or scramble fighters to investigate potential threats (bogeys) as they approach NORAD airspace. JSS radars can detect targets traveling at speeds of from 25 to 3,000 nautical miles per hour (knots).¹² NORAD air traffic controllers can set minimum speed threshold or "velocity gates," which make day-to-day ATC operations much easier by filtering out low-speed returns like cars, birds, or weather that "clutter" their screens,¹³ and remove or adjust these gates while they are sitting at their consoles.

The NRO and other agencies had notified NORAD of the approaching balloon on January 27, the day before the balloon came into range of NORAD's terrestrial-based radars.¹⁴ Based on the balloon's point of origin and signals it had been transmitting, there is little doubt that the notification identified the balloon as a Chinese reconnaissance asset.¹⁵ Alaska-based NORAD radars¹⁶ were cued to and acquired the balloon as it approached U.S. territory.

NORAD's Elmendorf Air Force Base fighter alert facility was fully operational on January 28, but as previously noted, the NORAD commander knew of the balloon's approach at least a day before it entered NORAD's air defense identification zone (ADIZ).¹⁷ That allowed the fighter wing at Elmendorf to plan the intercept and brief the pilots on the threat they would be facing before they stepped to their jets instead of scrambling them off of a classic alert posture, unaware of the threat they would be intercepting.¹⁸

Several statements by the Administration have attempted to downplay China's intent with excuses about the drifting, unsteerable nature of balloons, making the overflight of the U.S. a somewhat embarrassing accident.¹⁹ They also minimized the capabilities of those systems and the likelihood that the balloon collected any intelligence during its transit of the United States.²⁰ Perhaps unsurprisingly, neither of those assertions is true.

The Administration's Knowledge of High-Altitude Balloon Capabilities

The Defense Department and U.S. three-letter agencies like the NSA and NRO have known about the capabilities of high-altitude balloons for decades. The U.S. had an expansive balloon intelligence collection program during the Cold War,²¹ and as recently as 2019, the Defense Department experimented with the wide-area surveillance capabilities of sensors made by the Sierra Nevada Corporation that were mounted on World View Enterprises' high-altitude balloons.²²

World View's altitude control system allows its balloons to take advantage of wind direction and velocities at different altitudes to navigate across large distances to specific target locations. Once there, World View has demonstrated the ability to station-keep (maintain position) over a target for days at a time,²³ allowing sensor packages to collect images and signals intelligence with much greater fidelity than is possible with satellite-borne systems.

Some of the world's most sophisticated satellite imagery systems have a resolution of 30 centimeters.²⁴ High-altitude balloons operate at distances markedly closer to the Earth than those of satellites, allowing similar

imagery collection systems to deliver five-centimeter resolution²⁵ with corresponding improvements in geolocation for refined precision targeting capabilities.²⁶

High-altitude balloons' proximity to Earth has an even greater impact on the ability to collect radio and other SIGINT electromagnetic transmissions. Radio signal strength is inversely proportional to the square of the distance from the source of the signal in free space. This means that the electronic signals collected by that Chinese spy balloon were some 490 times stronger than their satellites could collect in low earth orbit,²⁷ which in turn means that ground-based, classified signals and radio traffic that were undetectable in space could readily be collected by the Chinese spy balloon's sensors.

Allowing a Known Threat to Penetrate and Spy on the United States

The Biden Administration initially tried to mask the balloon's presence from the public,²⁸ but when images of the massive craft began to hit the Internet, the Administration changed the narrative to say that the spy balloon might simply have been "blown off course" and, unbelievably, did not collect information on the classified installations it flew over during its transit across the United States.²⁹

As previously noted, however, the U.S. has known about China's balloon program and the incredible capability of those systems for years. Knowing that the U.S. tracked that balloon from the time it was launched from China through its approach to our airspace,³⁰ the question arises: Why did NORAD not shoot it down before it could execute its mission?³¹

NORAD has authority to engage imminent, fast-moving threats, but engaging more slowly developing situations and threats requires the approval of the President or the Secretary of Defense.³² General VanHerck notified the Chairman of the Joint Chiefs of Staff about the threat on January 27—a day before the balloon entered NORAD airspace—and waited for the Administration's response.³³ During the next three days, the balloon drifted over the desolate regions and tundra of Alaska and Canada, where it could easily have been destroyed without endangering anyone or anything on the ground, apart perhaps from a stray wild animal. Only when it was about to cross into the lower 48 states on February 1 did Secretary Austin even request that VanHerck present military options to deal with the balloon.

After entering continental U.S. airspace, the balloon would occasionally fly over densely populated areas, which gave the Administration the opportunity to balk at shooting it down for fear of collateral damage on

the ground.³⁴ However, one of the military's primary tasks over the past 30 years has been avoiding collateral damage, and there are vast areas in the western United States where the balloon could have been shot down with few or no collateral effects. Unfortunately, the Administration allowed it to continue to collect intelligence across the U.S. without interference, which only added to the perception of executive incompetence that emerged in the wake of the debacle in Afghanistan.

President Biden's order to destroy the balloon was finally executed off the coast of South Carolina. If there were any doubts about the Administration's purported fears about collateral damage or the lack of rational logic that allowed one of China's most sophisticated and capable reconnaissance platforms to fly across the U.S., they were put to rest shortly after the spy balloon was shot down.

Over the next several days, three more balloons (likely every one NORAD could locate) were targeted over Canada, Alaska, and Lake Huron. The decision to down them would have involved the same risk of collateral damage that downing the spy balloon over the desolate regions of Alaska and Canada would have involved, and as General VanHerck testified, the decision to destroy non-imminent threats had to come from "the Secretary of Defense or the President."³⁵

Because of the altitudes, size, and payloads of these three balloons, intercepting pilots could readily determine that they were harmless. Moreover, despite the Administration's claim, they were nowhere near heavily trafficked jet routes and did not threaten the air carrier traffic. But taking them out would give President Biden the opportunity to shift the narrative away from the Administration's lack of action on the Chinese spy balloon.

Thus, at a cost of more than \$470,000 per missile,³⁶ the order was given, and the three balloons were shot down, giving the President the opportunity to claim that "if any object presents a threat to the safety and security of the American people, I will take it down."³⁷ There was no reason to shoot down those three harmless objects, but in doing so, the Administration unwittingly confirmed that it could have—and absolutely should have—shot down that first Chinese spy craft before it was allowed to overfly and collect granular intelligence on some of the most strategically important locations and capabilities in the U.S. arsenal.

What Congress Should Do

It was not an intelligence failure or lack of military capability within NORAD that allowed this to happen. It was the indecision and incompetence

of the President and/or the Secretary of Defense that gave a Chinese spy craft the kind of access that it would never have gained had a competent Administration been in place.

With this in mind, Congress Should:

- **Direct** NORAD to provide a detailed report on its relationships with the National Security Agency, the National Reconnaissance Office, and Space Command with specific reference to detecting, alerting, and cueing their radars for such threats as high-altitude balloons.
- **Direct** the NSA, the NRO, and SPACECOM to provide the notification, timing, and threat-substantive details provided by those agencies to NORAD, the National Security Council (NSC), the President, the Secretary of Defense, and the Chairman of the Joint Chiefs of Staff from the time they first acquired the Chinese spy balloon through its destruction.
- **Direct** the NSA, the NRO, and SPACECOM to provide the notification, timing, and threat-substantive details provided by those agencies to NORAD, the NSC, the President, the Secretary of Defense, and the Chairman of the Joint Chiefs of Staff from the time they first acquired the three balloons that were detected and destroyed following the destruction of the Chinese spy balloon.
- **Direct** the Air Force to compel the testimony before Congress of the fighter pilots who intercepted the Chinese spy balloon off the coast of Alaska and those who intercepted and ultimately destroyed the three balloons that were detected and engaged following the destruction of the first balloon. These pilots should bring unedited copies of their gun camera footage and be prepared to convey what they were briefed before the mission, what they witnessed in the air, and when they were directed to destroy the balloons.

Conclusion

National Security is an unforgiving game. Adversaries make decisions based on both our military capability and the demonstrated competence of our national security apparatus. Until the leadership responsible for allowing this gross breach of national security is held responsible and ultimately replaced, the United States will remain at great risk.

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