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South Korea's THAAD: Impact on China's Nuclear Deterrent

By Wu Riqiang

Synopsis

The ability of the THAAD radar in South Korea to detect and track Chinese strategic missiles could pose a serious threat to China's nuclear deterrent. The best solution would be to replace the powerful THAAD radar with the less-capable Green Pine radar. Otherwise, we would probably see signs of deteriorating China-ROK relations and expansion of Chinese nuclear arsenal.

Commentary

AFTER HESITATING for several years, South Korea (ROK) decided to let the US-made Terminal High Altitude Area Defence (THAAD) anti-missile system be deployed in the country's Seongju County, North Gyeongsang Province. Seoul and Washington said this deployment is targeted against North Korea, not at any other country.

However, China has repeatedly expressed concern over this system, arguing that the THAAD radar's capability far exceeds the requirement for protecting ROK. Some Chinese analysts even contend that the THAAD is a real threat to China as it is useless against DPRK's short-range missiles.

The THAAD Radar's Coverage on China

Objectively, the THAAD system can provide South Korea additional protection from North Korea's missile attacks. However, THAAD cannot protect the northern part of the ROK, including Seoul. According to a report produced by US Department of Defence in 1999: "Using four upper tier endo-exo batteries (similar to the THAAD system) and seven lower tier batteries (similar to the PAC-3), all of the country

beyond the immediate reach of very short-range ballistic missiles could be covered....The low tier system would be used to protect Seoul and its environs.”

There are two important factors determining the coverage of the THAAD radar (TPY-2): detection range and direction. The estimate of TPY-2's detection range against the warhead of a ballistic missile varies from 870 km to 1,500 km. The former estimate was made by two US scholars, George Lewis and Theodore Postol, while the latter was used by a report of the US National Academy of Sciences in 2012.

From China's worst-case perspective, it is assumed that the detection range of the TPY-2 radar is 1,500 km. The detection range against the upper booster stage of Chinese ballistic missiles could be as high as 3,000 km. The TPY-2 radar is supposed to be directed at North Korea.

However, given the fact that the radar is relatively small and mobile, it is not difficult to turn the radar to face China. With a detection range of 1,500 km, the TPY-2 radar could detect most of Chinese strategic missiles targeting continental United States. The radar can track all Chinese submarine-launched ballistic missiles (SLBMs) launched from China's coastal waters targeting the US.

Except for those launched from Western China, all intercontinental ballistic missiles (ICBMs) targeting Central and Western US could also be detected. In some cases, the TPY-2 radar could even detect the releasing process of real warheads and decoys. Finally, the radar could detect the upper booster stages of all Chinese strategic missiles targeting America. In peacetime, the radar could also monitor Chinese SLBM flight tests launched from the Bohai Gulf.

It should be noted that if the radar is directed at North Korea, its coverage would be reduced just slightly. Two types of trajectories would fall out of the radar's coverage: the SLBMs launched from the South China Sea and SLBM flight tests. The radar could still detect other trajectories that could be covered if it is directed at China, just a bit later.

Impact on China's Nuclear Deterrent

The radar's coverage on China's missiles would help improve the effectiveness of US ballistic missile defence (BMD) system. First, detection of the deployment of real warheads and decoys would contribute to target discrimination, which is the most challenging task of missile defence. Second, detection of Chinese warheads would provide cuing information for the whole BMD system, enabling it to launch interceptors earlier and apply the shoot-look-shoot firing doctrine.

Third, detection of the upper booster stage of Chinese ballistic missiles could also provide rough cuing information for the BMD system, given that the upper booster stage has similar velocity and flies with the warhead. Fourth, watching Chinese SLBM flight tests could yield target signatures for missile defence system, improving its target discrimination capability in wartime. In sum, the impact on China's nuclear deterrent is serious but limited. China's nuclear deterrent would be undermined, not neutralised.

A more effective US missile defence system that can be achieved by reducing the odds that China could retaliate against US attack, would have the potential to seriously undermine Sino-American strategic stability. China has maintained a self-restrained nuclear posture for decades. The number of Chinese strategic missile capable of targeting the continental United States is limited.

Furthermore, it is generally believed that Chinese nuclear warheads are separated from missiles and stored in a special base. After absorbing a surprise disarming strike from the US, there would be very few, if any, Chinese missiles that can be used for retaliation. Therefore, even a small-scale highly effective missile defence could neutralise China's nuclear deterrent.

Solution and Consequences

The best solution would be to replace the powerful TPY-2 radar with the less-capable Green Pine radar, which is the fire control radar for South Korea's own missile defence system, KAMD (Korean Air and Missile Defence). By integrating the THAAD interceptors with Green Pine radar (with detection range of 500 km), the system would be capable of protecting South Korea without threatening China.

If this solution is not possible, there could be two serious security consequences. First, we would probably see signs of deteriorating China-ROK relations. The THAAD deploying site would be a priority target in any China-US conflict that might be unrelated to South Korea. Second, China would probably have to build more nuclear weapons to restore strategic stability undermined by US BMD improvement.

The THAAD deployment in South Korea is a warning signal for China. It shows that America would not consider China's security concerns when deploying missile defence systems. US missile defence is likely to expand as fast as technology advances. It will be constrained only by budgets. China is not worried about current missile defence architecture, but the unpredictable future of missile defence. The lack of flexibility in US attitude in deploying THAAD in South Korea does not help to mitigate China's anxiety.

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