Risk Management of Air Defense Identification Zone Interdiction Procedures

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1. News Highlights

The Chinese PLA Air Force's intrusion into Taiwan's Air Defense Identification Zone (ADIZ) has become a normalized pattern. That means Taiwan's response must take national security, international law and practice, and the principle of proportionality into account to effectively meet defense needs and avoid accidental conflicts; at the center of it all is the sense of risk management.

Military aviation activities in Taiwan's surrounding airspace are frequent, especially the almost daily incursions by Chinese military aircraft into the Taiwan ADIZ. In addition to

threatening national security, since the ADIZ highly overlaps with the Taipei Flight Information Region (TPE FIR), and approximately 1.75 million aircrafts pass through the TPE FIR each year according to the Civil Aeronautics Administration (CAA) Taiwan,[1] the PLA warplanes activities pose a potential flight threat to international civil aviation.

In contrast, the ADIZ management policies and interception procedures of other countries can be used as a reference and basis for Taiwan to respond to PLA provocations more effectively. This is to ensure the legality and legitimacy of Taiwan's air defense and alert actions, while reducing the risk of misjudgment

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1. Secretary of Aviation, "Striving for Participation in ICAO, CAA Sent Delegation to Canada for Professional Exchange," Ministry of Transportation of the Republic of China, September 19, 2019, https://www.motc.gov.tw/ch/home.jsp?id=14&parentpath=0,2&mcustomize=news_view.jsp&dataserno=201909190006.

between the military aircraft from the PLA and other countries.

2. Security Implications

2-1. The international law status of ADIZ

First established by the US,[2] the ADIZ concept is not backed by any treaty or agreement in the international legal system regarding its authorization and establishment, but there is also no explicit prohibition to it. In this context, Annex 15 of the Convention on International Civil Aviation (Chicago Convention) defines ADIZ as "a specially designated area of airspace in which aircraft are subject to additional special identification or (including) reporting procedures in connection with flight services."[3] This

has become how ADIZ is perceived or described in international law.

Therefore, according to the above definition, it is tacitly recognized that the establishment of the ADIZ and the control of aircraft passage are regulated by each establishing country in accordance with the flight regulations defined in the domestic law. In practical operations, the establishment of ADIZ in each country is aimed at satisfying national security needs and increasing air defense response time in the airspace of concern. Although they are unilaterally conducted,[4] they may be considered as the status of lex ferenda[5] in international law.

2-2. The international standard and rules of interception

Although countries designate their respective ADIZ according to different

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2. USC, "Subpart A – General," *Code of Federal Regulations*, https://www.ecfr.gov/current/title-14/chapter-I/subchapter-F/part-99/subpart-A.

3. ICAO, *Aeronautical Information Services* (International Civil Aviation Organization, July 2018, 6th Edition), pp1-2, https://www.bazl.admin.ch/dam/bazl/en/dokumente/Fachleute/Regulationen_und_Grundlagen/icao-annex/icao_annex_15_aeronauticalinformationservices.pdf.download.pdf/an15_cons.pdf.

4. A few cases are negotiated between countries, such as the ADIZ between the US and Canada.

5. In contrast to "actual law" (lex lata), which refers to what the law should look like (law to be proposed), the process of forming international law is quite time-consuming and complex, and when the existing law is unclear, "lex ferenda" serves to supplement and improve the existing law.

geopolitical environments and promulgate unilateral regulations, the interception procedures are still based on ICAO. In accordance with Annex 2 of ICAO, once an interception action is taken, the main procedures include:

a. Establishing radio communication: hailing through the emergency frequency of 121.5 MHz or 243 MHz.

b. Visual identification: if the unknown aircraft does not respond so that interception and identification actions are required, the scrambled interceptors should approach the target in three stages:
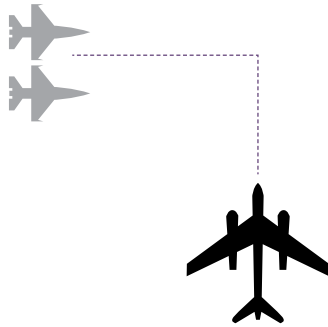
Stage 1: Initial visual contact: the interceptor should approach from the port side of the target, slightly higher ahead and maintain a distance of 300 meters to establish contact speed and position.

Stage 2: Visual identification: the lead interceptor (or the sole interceptor) approaches the target in a moderate manner, to the extent that sufficient visual identification information can be obtained.

Stage 3: After obtaining the identification information, the interceptor should take a shallow dive and fly slightly lower to increase the distance from the target.[6]

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6. ICAO, *Rules of the Air* (International Civil Aviation Organization, July 2005, 10th Edition), https://www. bazl.admin.ch/dam/bazl/en/dokumente/Fachleute/Regulationen_und_Grundlagen/icao-annex/icao_ annex_2_rulesoftheair.pdf.download.pdf/icao_annex_2_rulesoftheair.pdf.
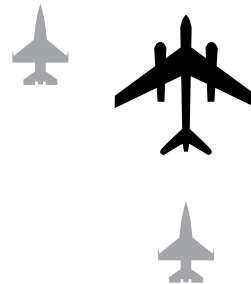
A. Guidance: The tactical air control unit guides the interceptors to the preset interception point with 3D radar.
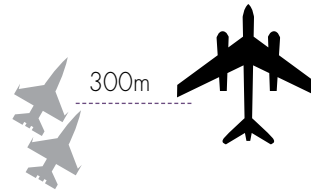
300m

B. Visual contact: The interceptors approach the target from the port side at a distance of about 300 meters.

C. Positioning: The interceptors approach from the rear to avoid collision and other risks.

D. Visual identification: The lead interceptor approaches from the front left and above to identify the crew and the necessary information as far as the naked eye can distinguish.

Schematic diagram

Source: The Free Vector website. https://www.freevector.com/, modified by the a uthor.p27

3. Trend Observation

3-1. Entrance into ADIZ still prior application-based

The management policies of major countries' ADIZ (as compared in the table below) can be divided into several major categories that include:

a. Prior application: This is used by most countries. The main procedure is to submit a flight plan prior to the flight.

b. Instrument control: Only civilian aircraft with specific radio equipment and military aircraft with IFF (Identification, Friend or Foe) devices are allowed to enter the ADIZ, as is the case in Turkey.[7]

c. In-time reporting: Surprisingly, Iran, which is considered a conservative country, only requires aircraft to notify its ATC by radio and maintain the designated altitude at a certain time before approaching specific airspace.[8]

Obviously, these three kinds of responses reflect the differences in the ADIZ management policies among countries based on their respective geographic locations, strategic needs, and, most importantly, sources of threats. In the Indo-Pacific region where potential military confrontation is taking place, prior applications are still the mainstream.

3-2. Standardized, transparent interception procedures reduce risks of misjudgment

Each country has its own practical ADIZ-related procedures, in which interception and identification are still the most common. Thailand claims that it will attack those who disobey the instructions of the interceptors, which is the most severe.[9] In the interception rules and procedures of each country, the author believes that the NATO procedures are more transparent and complete, and worthy of reference.

According to NATO "air policing" rules, the tactical operations of interception can be broken down into eight steps:

a. Detection: NATO's air defense systems

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7. Jeppesen, *Middle East Airway Manual* (Englewood: Jeppesen Sanderson, Inc, 2017), p.40.

8. Ibid., p.35.

9. Ibid, p.39.

must handle more than 30,000 targets per day. Aircrafts that do not turn on their transponders, establish radio communication with civil ATC, or submit flight plans are tracked by radar and reported to the Combined Air Operation Centre (CAOC).

b. Decision: The Air Wing Operations Commander has the authority to determine whether to activate the Quick Reaction Alert Interceptor plan and send aircraft to visually identify and intercept the unknown aircraft.

c. Launch: NATO air forces have deployed "all-weather" (24/7/365) standby aircraft capable of scrambling immediately after receiving orders, and guided by the CRC (Control & Reporting Centre) to approach the unknown aircraft.

d. Intercept: After arriving at the interception point, the interceptors approach the unknown aircraft astern, while the leader takes the position in front of the port side above the unknown aircraft.

e. Identify: The minimum distance between the interceptor and the target is by which the interceptor can establish visual contact with the target pilot according to ICAO regulations.

f. Escort: If necessary, the interceptors will guide the target to a designated airport or accompany it out of NATO airspace.

g. Return: Once the situation is cleared, the interceptors will make a shallow dive to detach from the target.

h. Reporting: The CAOC will submit the interception report to the Headquarter Allied Air Command for interception registration and statistics.

3-3. High-low fighter combination for interception cost control

The interception operations for air defense identifications are mainly executed through visual recognition and surveillance, in which cost considerations must be taken into account as well. The NATO fleet that carries out the aforementioned "air policing" mission is facing cost assessment issues as well.[10] According to the data released by the

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10. William Watson, *Fifth Generation Air Policing: The F-35 and Baltic Air Policing* (Tallinn: International Centre for Defence and Security, Aug 2021), pp. 2-3.

US DoD, the operating cost of the F-16 series is US$10,361/hour, while the cost of the T-38, an F-5 series derivative, is US$4,703/hour.[11] Taking advantage of the lower cost, Taiwan may consider retaining part of the F-5 fleet for countering low-speed bogeys or low-intensity interception training after upgrading to the Mk-16 ejection seats for ensured pilot safety. In the future, Taiwan may also introduce the RQ-9 UAVs, which is capable of launching AIM-9 Sidewinder missiles and currently being developed by the US Air Force, or similar aircraft to support surveillance operations toward low-speed aircraft (e.g. helicopters) as well as to form a high-low combination with the major combat aircraft for maximized cost-effectiveness.

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11. Office of The Under Secretary of Defense, *Fiscal Year (FY) 2021 Department of Defense (DoD) Fixed Wing and Helicopter Reimbursement Rates* (Washington, DC: DoD, 2021), pp. 6-7.

Table: Comparison of the ADIZ management policies of major countries

Country	Flight plans requested	Other requirements	Interception procedures
Turkey	No.	Civilian aircraft must have two-way radios. Military aircraft are required to have IFF.	When requested to leave by ATC, the aircraft must leave ADIZ or land immediately.
China	Yes. Must submit to the General Administration of Civil Aviation or the Ministry of Foreign Affairs	Aircraft must have two-way radios, and transponder must stay on.	Reserve the right for emergency response actions.
Pakistan	Yes.	"Air defense clearance" must be obtained at least 15 minutes before entering ADIZ.	Yes.
Japan	Yes, but only for entering Japanese territorial airspace. Otherwise only radio contact is needed.	The pilot must notify ATC of any flight plan change.	Combat aircraft will perform visual identification.
Canada	Yes.		Yes.
Iran	No, but ATC must be notified 5 minutes before entering Iranian airspace.	Defense Visual Flight Rules (DVFR) require maintaining an altitude of 15,000 feet.	Yes.
Iran	Yes.	"Air defense clearance" must be obtained at least 10 minutes before entering ADIZ.	Yes.
US	Yes. ATC must be notified of temporary crossing at least prior to the aircraft entering ADIZ.	Aircraft must have two-way radios. The pilot must keep radio contact and follow DVFR.	Yes. Interception will be executed in accordance with ICAO regulations.

Thailand	Yes, for either entering or crossing Thai ADIZ.	The pilot must keep radio contact, follow the designated route and compulsory reporting points.	Yes. Interception will be executed in accordance with ICAO regulations. Special claim: aircraft disobeying instructions will be attacked and subject to fines.
Sri Lanka	Yes.	"Air defense clearance" must be obtained before entering ADIZ.	Yes. Interception will be executed in accordance with ICAO regulations.
Philippines	Yes. Must submit at least 30 minutes before taking off.	Aircraft must have two-way radio and report every 30 minutes.	Yes. Interception will be executed in accordance with ICAO regulations.
Myanmar	Yes. Must submit at least 30 minutes before taking off. Sudden route change is not allowed except for an emergency.	The pilot must keep in contact with ATC even with ADIZ permission. "Air defense clearance" must be obtained before entering ADIZ.	Yes.
Australia	Yes. Must submit to the ATC at least 60 minutes prior to entering Australian ADIZ.	Must keep listening and responding to ATC, and keep transponder on during the entire flight.	Yes.
Korea	Yes. Must be sent to Korean DoD. It's allowed to request route change or report an emergency from the in-flight aircraft.	Aircraft must have two-way radio and keep transponder on during the entire flight.	Yes.

Source: JEPPESEN, Airway Manual, Pacific / Middle East.

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