

# Advisory Circular

Subject: ASSIGNMENT OF AIRCRAFT CALL SIGNS AND ASSOCIATED

**TELEPHONIES** 

**Date:** 10/08/2020 **AC No: 120-26N** 

**Initiated by:** AJR-2

## SECTION 1. GENERAL INFORMATION

- **1.1. PURPOSE.** This Advisory Circular (AC) describes the Federal Aviation Administration (FAA) Air Traffic Organization (ATO) requirements and process for the assignment and authorization for use of aircraft call signs, specifically, International Civil Aviation Organization (ICAO) three-letter designators (3LD), U.S. special designators, local designators, and their associated telephonies. Guidance is provided to aircraft operators for requesting an aircraft call sign and explains the assignment and the authorization process for their use domestically, within the National Airspace System (NAS); and their use internationally.
- **1.2. AUDIENCE.** The audience for this Advisory Circular includes, but is not limited to, all ATO service units, including air traffic control (ATC) facilities; other FAA lines of business; other U.S. government agencies, including Department of Defense; aircraft operators; any civil or governmental entities involved in the use of or assignment and authorization of call sign designators and associated telephonies; and any others involved in the aviation community.
- **1.3. CANCELLATION.** This Advisory Circular cancels Advisory Circular 120.26M, dated Sep 11, 2018.
- **1.4. REGULATORY SOURCE.** The regulatory sources for the assignment and authorized use of call sign designators and associated telephonies are published in FAA Order JO 7610.12A, *Assignment and Authorization of Call Sign Designators and Associated Telephonies*.

#### 1.5. EXPLANATION OF CHANGES.

- **a.** This change to paragraph 1.2 clarifies the audience for this AC.
- **b.** This change to paragraph 2.2 clarifies that an ICAO 3LD is the only call sign type FAA ATO will assign and authorize for certain U.S. military aircraft.

- **c.** This change to paragraph 2.3 modifies the NOTE to direct call sign requests from military services, other than the U.S. Army, through their appropriate military representative.
- **d.** This change deletes paragraph 2.4, *Priority Handling for Civilian Air Ambulance Flights*, as this information has been updated and clarified in the Aeronautical Information Manual (AIM).
- **e.** This change deletes Section 3, *Before Requesting an Aircraft Call Sign*, and paragraph 3.1, *Programmable ADS-B Equipage Requirement*. Subsequent sections 4 through 8 and paragraphs 4.1 through 8.1 are renumbered.
- **f.** This change to paragraph 3.1, renumbered from 4.1, reformats, revises, and clarifies the requirements for an FAA authorized ICAO 3LD/telephony, including applicable policy and provisions necessary for assignment; and approval requirements for third party use. In addition, ICAO 3LD lack-of-use rule is modified from three years to two years.
- **g.** This change to paragraph 3.2, renumbered from 4.2, reformats, revises, and clarifies the requirements for civil and governmental applicants requesting an FAA authorized ICAO 3LD/telephony. In addition, a NOTE is added to explain that all governmental ICAO 3LDs/telephonies are published in ICAO Document 8585 and FAA JO 7340.2.
- **h.** This change adds new paragraph 3.3, *Modifications to ICAO 3LD/Telephony or Company Information* that describes the initial process for modifying an ICAO 3LD/telephony.
- i. This change to paragraph 4.1, renumbered from 5.1, clarifies the eligibility and general qualification requirements for authorization of U.S. special call signs. This change also deletes **b(3)** and NOTE pertaining to flight schools.
- **j.** This change to paragraph 4.2, renumbered from 5.2, clarifies the information required for requesting a U.S. special call sign and deletes **b(4)** which pertained to ADS-B equipage.
- **k.** This change to paragraph 5.1, renumbered from 6.1, deletes the NOTE in **d** that pointed to the U.S. special call sign section.
- 1. This change to paragraph 5.2, renumbered from 6.2, adds a NOTE in **a** pertaining to military aircraft operators requesting a local call sign and deletes the NOTE in **b** that pointed to the old ADS-B equipage paragraph.
- m. This change to paragraph 6.1, renumbered from 7.1, reformats a to clarify the use of the FAA authorized telephony for aircraft identification and deletes the NOTE that pointed to the old ADS-B equipage paragraph. This change also specifies in b(1) that using the last three characters of an aircraft's registration number in the flight number is not authorized. In addition, this change adds b(5) pertaining to ADS-B equipage requirements for ICAO 3LD and U.S. special call signs.
  - **n.** This change includes general edits and updates throughout for improved clarity.

## SECTION 2. AIRCRAFT CALL SIGNS EXPLAINED

#### 2.1. WHY AIRCRAFT CALL SIGNS ARE USED

The ability of air traffic control (ATC) to positively identify aircraft is fundamental to ensuring the security and safety of the National Airspace System (NAS). The use of authorized call sign designators and associated telephonies also improves communication between pilots and ATC by reducing distractions and easing frequency congestion. The FAA ATO is responsible for ensuring that every call sign is properly assigned and authorized, clearly related to the type of operation permitted, and is used within the NAS in accordance with its authorization. In addition, aircraft operators that conduct international business flights may need to obtain an ICAO 3LD and associated telephony for enhanced identification and security purposes, if recommended by FAA Flight Standards or Department of Homeland Security (DHS) Customs and Border Protection (CBP).

#### 2.2. WHO CAN USE AN AIRCRAFT CALL SIGN

Call sign designators and associated telephonies can be assigned and authorized by FAA ATO for U.S. registered civil aircraft, U.S. governmental aircraft, and certain U.S. military aircraft (for ICAO 3LD requests only). Aircraft operated by commercial companies, government agencies, and private organizations may need call signs and telephonies for operations within the air traffic control (ATC) system. Flight servicing companies and organizations may also need ICAO 3LDs for addressing flight messages.

#### NOTE-

The FAA does not authorize the use of ICAO 3LDs, U.S. special call signs, or local call signs by sUAS operators.

#### 2.3. TYPES OF AIRCRAFT CALL SIGNS

The three types of call sign designators and telephonies authorized for use by FAA ATO and described in this advisory circular are as follows:

- **a.** International Civil Aviation Organization (ICAO) three-letter designator (3LD) and associated telephony (see Section 4);
  - b. U.S. special call sign designator and associated telephony (see Section 5); and
  - **c.** Local call sign designator and associated telephony (see Section 6).

## NOTE-

Except for certain ICAO 3LDs, this AC is not applicable for the assignment of military call signs which are assigned by the Department of Defense (DOD). The point of contact for U.S. Army aviation units requesting a call sign is the U.S. Army Aeronautical Services Agency via email at (usarmy.belvoir.tradoc.list.usaasaops@mail.mil). Call sign requests from other military Services should be routed through their appropriate Major Command (MAJCOM) or equivalent.

# SECTION 3. ICAO 3LD CALL SIGNS

# 3.1. REQUIREMENTS FOR ICAO THREE LETTER DESIGNATORS AND ASSOCIATED TELEPHONIES

- **a.** ICAO 3LDs and associated telephonies are registered with and approved by ICAO, but aircraft operators must receive authorization from FAA ATO prior to use. ICAO 3LDs and associated telephonies are assigned in accordance with applicable policy and provisions set forth and specified in the following:
- (1) FAA authorization letters and the instructions in the aircraft operator's FAA operating certificate;
  - (2) Security agreements pertaining to third party use of call signs;
  - (3) This advisory circular.

# b. ICAO 3LDs and associated telephonies may be assigned to

(1) Scheduled Title 14 Code of Federal Regulations (CFR) part 121 and part 135 aircraft operators.

#### NOTE-

- **1.** Part 121 aircraft operators are governed by 14 CFR, specifically, 14 CFR 121 "Operating Requirements: Domestic, Flag, and Supplemental Operations."
- **2.** Part 135 aircraft operators are governed by 14 CFR, specifically, 14 CFR 135 "Operating Requirements: Commuter and On Demand Operations and Rules Governing Persons on Board Such Aircraft."
- (2) Chartered aircraft operators under any part of 14 CFR engaged in commercial international flight operations; or
- (3) Other entities, such as corporations, nationally recognized part 61 and/or part 141 flight schools, flight servicing companies, government agencies (including DOD), and charitable organizations.
- **c.** Third party use of an FAA authorized ICAO 3LD and associated telephony may be approved for operations within the NAS, for certain aircraft operators, under either of the following conditions:
- (1) Flight servicing companies, charitable organizations, or other organizations as approved by the FAA, require a security agreement with ATO System Operations Security.
- (2) U.S. Aircraft operators may require use of their ICAO 3LD and associated telephony by another aircraft operator (that operates under 14 CFR part 121, part 129, or as

otherwise approved by ATO System Operations Security) for services contracted, such as a wet lease, dry lease, or charter.

#### NOTE-

AJR-2 approval authority for the use of a call sign does not constitute approval for any regulatory requirement of Department of Transportation (DOT) and/or Department of Homeland Security (DHS).

**d.** ATO must conduct periodic audits to identify ICAO 3LDs/telephonies that are assigned to U.S. aircraft operators and registered with ICAO, but are no longer in use. Lack of use for two years or more may result in the assignment or authorization of an ICAO 3LD/telephony to be revised, reassigned, rescinded, or cancelled.

# 3.2. REQUESTING AN ICAO THREE LETTER DESIGNATOR AND ASSOCIATED TELEPHONY

#### a. Civil applicants.

- (1) Civil applicants must submit requests for ICAO 3LDs and associated telephonies to ATO Aeronautical Information Services (AIS) via email (callsigns@faa.gov);
- (2) Civil applicants must submit the following information for validation that the request meets FAA requirements:
  - (a) Name and address of the aircraft operator or organization;
- (b) Type of aircraft operation or service provided by the company or organization;
- (c) Identification of the 14 CFR part under which aircraft operations are to be conducted and, if applicable, a copy of the aircraft operator's FAA operating certificate;
- (d) Provide a copy of the aircraft operator's monthly published or projected flight schedule, including routes or areas of operation;
- (e) (Optional) Provide a list of five preferred ICAO 3LDs and associated telephonies, listed in their desired order.

## NOTE-

FAA ATO will give full consideration to the applicant's preferred list before assigning an ICAO 3LD/telephony. However, an alternate ICAO 3LD/telephony may be recommended for reasons of safety and security of the NAS (including conflict with duplicate call signs, similar sounding call signs, and military call signs).

(3) ATO AIS will advise the civil applicant of the ICAO 3LD purchase fee (<a href="https://www4.icao.int/3LD/Home/Fees">https://www4.icao.int/3LD/Home/Fees</a>) and request the applicant consent to the fee prior to processing the ICAO 3LD request.

#### NOTE-

ICAO charges civil applicants a significant fee to purchase a Personal Identification Number (PIN), which is used to register a proposed ICAO 3LD/telephony. Civil applicants should not purchase a PIN on the ICAO 3LD web site until instructed by ATO AIS, otherwise the applicant risks forfeiture of the PIN fee.

- (a) If the civil applicant consents to the ICAO fee, ATO AIS will process the initial FAA request requirements (as described in a(2) above) for validation.
- (b) If the civil applicant does not consent to the ICAO fee, ATO AIS will archive the request as inactive.
- (4) If the initial FAA request requirements are met, ATO AIS must coordinate the request with ATO System Operations Security to further validate that use of the proposed ICAO 3LD/telephony is compliant with FAA security policies.
- (5) If the request for an ICAO 3LD/telephony is unable to be validated for any reason, ATO AIS will provide an explanation to the civil applicant.
- (6) If the request for an ICAO 3LD/telephony is validated, ATO AIS will assign the civil applicant an appropriate ICAO 3LD/telephony and direct the applicant to the ICAO 3LD web site (<a href="http://www.icao.int/3LD">http://www.icao.int/3LD</a>) to purchase a PIN for registration of the new ICAO 3LD/telephony.
- (a) If ICAO approves the ICAO 3LD/telephony request, ATO AIS will issue a letter of authorization to notify the civil applicant of the effective date when the assigned ICAO 3LD/telephony is authorized for use.

#### NOTE-

ICAO approval does not authorize the use of an ICAO 3LD/telephony. ICAO approval only registers the ICAO 3LD/telephony with ICAO. Only FAA ATO can provide the authorization for a U.S. operator to use an ICAO 3LD and associated telephony.

(b) If ICAO disapproves the ICAO 3LD/telephony request, ATO AIS will recommend a different ICAO 3LD/telephony for the civil applicant to register on the ICAO web site.

# b. Governmental applicants.

(1) Governmental aircraft operators (Federal, state, local, tribal, territorial, and law enforcement aircraft) must submit requests for ICAO 3LDs and associated telephonies to ATO System Operations Security via email at (9-ATOR-HQ-IFOS@faa.gov). The request must include the name and address of the organization and a Point of Contact (POC).

- (2) ATO System Operations Security will validate the initial request requirements and validate that use of the proposed call sign is compliant with FAA security policies.
- (3) If the request is unable to be validated, ATO System Operations Security will provide an explanation to the governmental applicant.
- (4) If both the initial FAA request requirements and FAA security policies are validated, ATO System Operations Security will assign an appropriate ICAO 3LD and associated telephony to the governmental applicant.
- (5) ATO System Operations Security will register the assigned ICAO 3LD and associated telephony directly on the ICAO 3LD web site.

#### NOTE-

- **1.** Governmental applicants are exempt from the ICAO 3LD fee and should not attempt to access the ICAO 3LD web site.
- **2.** All governmental ICAO 3LDs/associated telephonies and sponsoring organizations will be published in ICAO Document 8585 and FAA JO 7340.2.
- (a) If ICAO approves the ICAO 3LD/telephony request, ATO System Operations Security will issue a letter of authorization to notify the governmental applicant of the effective date when the assigned ICAO 3LD/telephony is authorized for use.
- (b) If ICAO disapproves the ICAO 3LD/telephony request, ATO System Operations Security will recommend a different ICAO 3LD/telephony to the governmental applicant prior to further ICAO registration.

# 3.3. MODIFICATIONS TO ICAO 3LD/TELEPHONY OR COMPANY INFORMATION

**a.** Civil aircraft operators requesting to modify an existing ICAO 3LD/telephony or company name/address must submit an explanation of change to ATO AIS via email (callsigns@faa.gov).

#### NOTE-

ICAO charges a fee for modifications to an existing civil ICAO 3LD/telephony (See paragraph 3.2a).

**b.** Governmental aircraft operators requesting to modify an existing ICAO 3LD/telephony or company name/address must submit an explanation of change to ATO System Operations Security via email (9-ATOR-HQ-IFOS@faa.gov).

# SECTION 4. U.S. SPECIAL CALL SIGNS

# 4.1. REQUIREMENTS FOR U.S. SPECIAL CALL SIGNS

U.S. special call sign designators and associated telephonies may be assigned and authorized for certain flight operations, normally of a short or limited duration, to enable special handling by ATC. ATO System Operations Security determines if U.S. special call sign designators and associated telephonies are operationally appropriate for use in the NAS.

- **a.** ATO System Operations Security may authorize a U.S. special call sign designator/telephony for:
- (1) Non-military governmental aircraft operations (specifically federal, state, local, tribal, territorial, and law enforcement);
- (2) Civil aircraft supporting non-military governmental activities, including homeland security, national security, law enforcement, or intelligence. (When contracted, the contracting governmental agency must request the U.S. special call sign, unless otherwise authorized by the FAA);
- (3) Civil aircraft supporting emergencies or disasters, as requested by a state government Emergency Operations Center (EOC) or other government agency involved in disaster relief. (The government agency will request the call sign with ATO, unless otherwise authorized by the FAA);
- (4) Civil aircraft that require special handling for security or governmental test purposes; or
- (5) Civil aircraft participating in activities or events that ATO System Operations Security determines as appropriate for reasons of safety and security of the NAS (i.e., commemorative flights).

#### NOTE-

Commemorative flights are typically civil flights associated with a specific flyover in celebration or memorial of an event or person on a national, state, or local level.

- **b**. Requirements for certain U.S. special call signs:
- (1) Call sign requests for civil aircraft flights contracted by the military must be submitted through the military or the aircraft operator may request an ICAO 3LD and associated telephony (as described in paragraph 3.2).
- (2) Call sign requests by U.S. Army National Guard/Reserve units must be submitted to the U.S. Army Aeronautical Services Agency via email at (<u>usarmy.belvoir.tradoc.list.usaasaops@mail.mil</u>). Call sign requests from other military

Services should be routed through their appropriate Major Command (MAJCOM) or equivalent.

- **c.** U.S. special call signs are meant for flight operations of a short or limited duration (in accordance with 47 CFR 87.107, *Station Identification*), however flight operations may be considered for longer duration if deemed appropriate by ATO System Operations Security for reasons of safety and security of the NAS.
- **d.** U.S. special call sign designators can be used for filing flight plans and may be issued for a designated area of operation corresponding to the duration of an event or circumstances requiring special handling.
- **e.** U.S. special call sign designators are comprised of four to five letters. The U.S. special call sign designator, combined with the flight number (no letters permitted after the call sign designator) must not exceed seven total characters (see paragraph 6.1).
- **f.** The U.S. special call sign designator, when pronounced, is normally the telephony unless a unique telephony is assigned by ATO System Operations Security.

# 4.2. REQUESTING A U.S. SPECIAL CALL SIGN

- **a.** Aircraft operators must make requests for U.S. special call sign designators and associated telephonies to ATO System Operations Security via email (9-ATOR-HQ-IFOS@faa.gov).
- **b.** Aircraft operators must submit the following information for validation that the request meets FAA requirements:
  - (1) Name and address of the aircraft operator or organization;
  - (2) Type, purpose, and description of flight, operation, or event;
  - (3) Duration of flight, operation, or event.
  - (4) (Civil applicants only) Aircraft type and number of aircraft participating; and
  - (5) (Civil applicants only) Routes or areas of flight, operation, or event.
- **c.** If ATO System Operations Security determines the request does not meet FAA requirements or FAA security policies, an explanation will be provided to the applicant. (In certain instances, ATO System Operations Security may recommend an alternate U.S. special call sign to the applicant.)
- **d.** ATO System Operations Security will approve, administer final assignment, and issue a letter of authorization to notify the applicant when the U.S. special call sign designator and associated telephony is authorized for use.

# SECTION 5. LOCAL CALL SIGNS

# 5.1. REQUIREMENTS FOR LOCAL CALL SIGNS

Local call sign/telephony designators are authorized for use only for local flight operations as specified in a letter of agreement (LOA) between the ATC facility(ies) and the requesting aircraft operator. LOAs concerning the use of aircraft call signs by local flight operators must conform to the following standards:

- **a.** Local call signs must not be assigned a three-letter designator to ensure they do not conflict with ICAO 3LDs. Local call signs may be assigned 2, 4, 5, and 6 letter call sign designators.
- **b.** Local call sign/telephony designators must not conflict with call signs and/or telephonies in use by military aircraft and other aircraft that operate in the local area.
- **c.** Local call signs are only authorized for communications and operations with ATC facilities that are signatories on the LOA.
- **d.** Local call signs are not authorized for filing flight plans outside the local area designated in the LOA.

# 5.2. REQUESTING A LOCAL CALL SIGN

**a.** Aircraft operators must submit requests for local call sign designators and associated telephonies to the appropriate FAA ATC facility.

#### NOTE-

**1.** According to Army Regulation (AR) 95-2, Air Traffic Control, Airfield/Heliport, and Airspace Operations, U.S. Army aviation units are not authorized to obtain call signs or enter into call sign agreements with local or regional ATC agencies (i.e., FAA ATC facilities). The point of contact for U.S. Army aviation units requesting a call sign is the U.S. Army Aeronautical Services office via email at <a href="mailto:usarmy.belvoir.tradoc.list.usaasaops@mail.mil">usarmy.belvoir.tradoc.list.usaasaops@mail.mil</a>.

- **2.** *Military aircraft operators from other Services may have similar authorization restrictions pertaining to local call signs and should contact their operational command for guidance.*
- **b.** The local ATC facility will provide the applicant with the FAA requirements for requesting local call sign designators and associated telephonies.
- **c.** Local call signs are authorized for use through an LOA between the ATC facility(ies) and the aircraft operator.

# SECTION 6. RULES FOR USING AIRCRAFT CALL SIGNS

#### 6.1. HOW TO USE ANY FAA AUTHORIZED AIRCRAFT CALL SIGN

- **a. Aircraft Identification.** The proper use of authorized call signs and telephonies is essential to ensuring the safety and security of the NAS by providing distinct aircraft identification for ATC. The authorized call sign designator, together with a flight number (see subparagraph 6.1.b below for more details), serves as the aircraft identification for the ATC system and is used instead of the aircraft registration number for ATC security and operational purposes. The FAA authorized telephony, when stated in conjunction with the flight number, serves as the aircraft identification in radio communications with ATC.
- **b.** Use of Authorized Call Sign Designators. To ensure proper aircraft identification for ATC, authorized call signs must meet certain requirements for use in the NAS.
  - (1) FAA authorized call signs must incorporate the following characteristics:
- (a) The combination of call sign designator and flight number must not exceed seven alpha-numeric characters;
- (b) To avoid similar or same call sign confusion, the call sign designator letters must immediately be followed in sequence only by the numerals of the flight number:
- (c) No additional letters of the alphabet are permitted after the call sign designator (except in (2) below). Using the last three characters of an aircraft's registration number as the flight number is not authorized.

#### NOTE-

- **1.** The use of letters as part of the flight number could compromise the operations security of a flight.
- **2.** Examples of acceptable call sign designators with flight number are: MDSTR1, TORA172, ABX91, and SWA2604.
- **3.** Examples of unacceptable call sign designators with flight number are: TORA1720, NEWS42G, BKA16CH, and LBQ17523.
- (2) For operational purposes, scheduled aircraft operators (as defined in subparagraph 3.1b(1) or other aircraft operators using ICAO 3LDs as authorized by the FAA, may use a letter as the final character of the aircraft identification as long as it is preceded by a numeral (i.e., AAL351A);
- (3) When not operating with their FAA authorized call sign, pilots are required to use the aircraft registration number as the aircraft identification for flight plan filing and radio communications.

(4) Use of ICAO 3LDs for international telecommunications services, including the Aeronautical Fixed Telecommunications Network (AFTN), must be in accordance with ICAO Document Annex 10, *Aeronautical Telecommunications*.

#### NOTE-

The AFTN system is an integrated, international system of aeronautical communications networks that uses ICAO 3LDs for identification, communication, and billing purposes. The AFTN system provides the exchange of messages and flight plans between aeronautical and fixed stations within the network.

- (5) An ADS-B equipped aircraft operating with an FAA authorized ICAO 3LD or U.S. special call signs must have the call sign programmed into their ADS-B Out avionics, unless otherwise authorized by the FAA. Additional information on ADS-B equipage is available on the FAA website at <a href="https://www.faa.gov/nextgen/equipadsb/installation/call\_sign/">https://www.faa.gov/nextgen/equipadsb/installation/call\_sign/</a>.
- **c. Use of Telephonies.** Telephonies are used for aircraft identification purposes instead of phonetically pronouncing the call sign designator to expedite radio communication with ATC. To ensure proper aircraft identification for ATC, authorized telephonies must meet the following requirements for use in the NAS:
- (1) The telephony must be distinct and dissimilar from other telephonies (such as those listed in FAA JO 7340.2) to avoid confusion of similar-sounding call signs and to reduce potential for miscommunication with ATC. The telephony should also incorporate the following characteristics:
- (a) Ideally, the telephony should reflect a correlation between the call sign designator and the name of the aircraft operating agency or its function; and
- (b) The telephony should be easy to pronounce in English, comprised of one or two words, and consist of two or three syllables.
- (2) An ICAO 3LD must not be used in phonetic form as the telephony. However, ICAO allows continued use of certain telephonies approved prior to establishment of this rule (e.g., UPS).
- (3) The aircraft operator must include a new or changed telephony in the "REMARKS" section of their flight plans for at least 60 days following the effective date of the new telephony, unless otherwise authorized by the FAA.

# 6.2. RESOLUTION OF AIRCRAFT IDENTIFICATION PROBLEMS

- **a.** Aircraft operators should report occurrences of aircraft identification problems, such as similar-sounding or duplicate call signs, to the ATC facility where the occurrence took place.
- **b.** For ATC facilities, ATO AIS (<u>callsigns@faa.gov</u>) is the point of contact for aircraft identification issues or concerns directly involving FAA authorized ICAO 3LDs, U.S. special call signs, and/or associated telephonies.

# **SECTION 7. ADDITIONAL INFORMATION**

# 7.1. EFFECTIVE DATE AND PUBLICATION

FAA facilities and the general public are normally notified of the effective dates when ICAO 3LDs, certain U.S. special call signs, and associated telephonies are authorized for use via General Notice (GENOT) and other postings on the FAA Orders and Notices website. The authorizing ATO office must ensure these call signs are published in FAA JO 7340.2, Contractions.

Edward B. Donaldson Director, System Operations Security Air Traffic Organization