



institute of makers of explosives

Guidance for Submitting IMESAfr-based Variance Requests to ATF

Background: The Institute of Makers of Explosives Safety Analysis for Risk (IMESAfr) is a quantitative risk assessment tool that calculates risk to the public in proximity of explosives facilities or storage sites. In addition to risk assessment, IMESAfr software conducts a comprehensive calculation by incorporating donor structure and activity, as well as exposed site structures into its quantitative assessment. More information on IMESAfr, which was developed in cooperation with A-P-T Research, Inc., may be found on the IME website at https://www.ime.org/content/imesafr_learn_more.

Regulations of the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) at 27 CFR 555.206 govern the location of explosives storage magazines in relationship to other magazines, inhabited buildings, passenger railways, and public roadways (which are referred to as the Potential Explosion Site (PES) / Exposed Site (ES) pair in IMESAfr). For commercial explosives and blasting agents, tables located at 27 CFR 555.218 and 555.220¹ (respectively) specify minimum separation distances. The ATD does not consider factors that IMESAfr calculates, including any potential for accidental explosives incidents, how buildings are constructed and how many people might be in them, and for how long people may be exposed.

ATF may allow an alternate method or procedure to a regulation under its jurisdiction, referred to as a “variance,” through 27 CFR 555.22, “Alternate methods or procedures.” Under that section, ATF may approve a variance from regulation if shown good cause, if the variance is within the purpose of and consistent with the intended effect of the regulation, and the requested variance is substantially equivalent to the regulation. Additionally, an alternate method or procedure may not be contrary to the law or hinder its implementation and may not increase government costs.

If a federally licensed or permitted explosives company wishes to deviate from ATD specified under ATF regulation, it must request a variance to do so pursuant to 27 CFR 555.22.

Discussion: In January 2014, ATF issued a letter to IME stating, “ATF will accept variance requests to deviate from the prescribed quantity and distance requirements based upon IMESAfr evaluations.” The [letter](#), posted on the IME website, further clarifies that a variance may be justified where the industry member takes certain steps to reduce risk through changes to the potential explosion site (PES) to a risk level equivalent to the current regulatory requirements. In its letter, ATF articulated that they may

¹ Both tables are published in IME SLP-2, *The American Table of Distances*, hereafter referred to as “ATD”

approve a variance pursuant to the allowance for alternate methods as stated in 27 CFR Part 555.22. In April 2015, ATF issued its first variance based on IMESA FR using its “risk bank²” methodology.

In June 2016, IME requested that ATF officially accept IME’s numerical criterion of 1×10^{-6} for tolerable annual risk to an individual member of the public when considering IMESA FR-based variance requests. The agency stated that a third-party validation of specific values utilized in IMESA FR’s algorithms would be beneficial. Therefore, in December 2017, a peer review of IMESA FR was launched by ACTA Inc. for IME and the IMESA FR Science Panel (ISP), an independent body consisting of government, academia, and industry personnel that serves to advance IMESA FR’s technical and scientific transparency and accuracy. The peer review was completed in August 2018, confirming the various probability of event (P(e)) estimates for the reviewed activities to be “meaningful and appropriate.” The findings of the review further substantiate IME’s request that ATF grant IMESA FR-based variances within proposed tolerable risk criteria for explosives storage siting. In September 2018, the IMESA FR Science Panel issued a formal letter to ATF, articulating that the agency should consider the findings of the peer review as a foundation for accepting established risk criteria when evaluating IMESA FR-based variances.

In addition to risk criteria for an individual member of the public, IME has accepted the recommendation of the IMESA FR Science Panel for acceptable annual public Group Risk: 1×10^{-5} . However, also based on the decisions of the ISP, industry members whose variance scenarios result in an annual public Group Risk below 1×10^{-4} are encouraged to work with ATF on a case-by-case basis.

Guidance: Industry members who are unable to meet traditional ATD requirements and have conducted an IMESA FR assessment of their sites resulting in acceptable risk levels are encouraged to submit a variance request to ATF. IME strongly suggests that variances be requested for approval based on acceptable risk criteria. Variance requests must meet the conditions prescribed in 27 CFR 555.22.

Requestors should include the following information in their submissions to ATF:

General Information:

- ✓ Requestor’s full license name, license number, address of storage location, point of contact name and phone number;
- ✓ Cover Letter stating the reason/justification for utilizing IMESA FR (e.g. reducing the frequency of transportation or handling of materials and related risk exposure), as opposed to the ATD;
- ✓ Relevant IMESA FR scenario file and risk assessment reports (In the most recent version of IMESA FR using English Units);
- ✓ IMESA FR Training Number³;
- ✓ Full description of the affected site and operations not otherwise addressed in the IMESA FR assessment;
- ✓ Diagrams and, if utilized, a photo/image of the storage site and affected exposed site representing the exact locations and azimuths of all explosives storage magazines and inhabited buildings; and

² Under “risk bank,” variance seekers are required to substantiate the equivalent level of safety by demonstrating the cumulative or actual risk of the site as compared to tolerable or acceptable risk criteria, as well as changes made to the potential explosion site to reduce risk. Risk bank-based variances are not recommended by IME.

³ A list of individuals who have received a certificate of training and their training numbers can be found here: <https://www.aptr-research.com/capabilities/training/imesafr-training-participants/>

- ✓ Statement of additional policies/best practices the requestor has in place to help reduce risk (e.g. employee training program, self-inspections, etc.)

Potential Explosion Site (PES) Information:

- ✓ Photos of magazines and storage structures;
- ✓ Magazine description worksheets used for ATF license application/renewal;
- ✓ For each magazine, a statement of desired net explosives quantity at the current distance that fails ATD; and
- ✓ Identify if the magazines are combined for ATD purposes;

Exposed Site (ES) Information:

- ✓ Photos and descriptions of all inhabited buildings (Google Street View is acceptable);
- ✓ Addresses of the inhabited buildings;
- ✓ Photo of speed limit sign(s) for each highway that fails QD;
- ✓ Traffic data if acquired from state DOT database; and
- ✓ Census Data if used to assume house occupancies

Reports:

- ✓ Site and Consequence Report – Group Risk; and
- ✓ ES Report for all ESs – Individual Risk

Submit the variance request to the Chief, ATF Explosives Industry Programs Branch (EIPB), at eipb@atf.gov or via hardcopy to 99 New York Ave., NE, Mailstop 6N-675, Washington, DC 20226. ATF and IME recommend submitting variances to ATF EIPB electronically via email for better tracking and quicker delivery. Further questions regarding ATF variances may be referred to EIPB at the email address specified above or at (202) 648-7120.

IME may assist with the justifying language for IMESA FR as an acceptable alternate method and may provide a policy review prior to submission of a variance request to ATF, however, IME does not prepare IMESA FR assessments for industry or conduct technical reviews. Industry members who do not have personnel trained and qualified to conduct IMESA FR assessments⁴ may procure services from a qualified consultant with IMESA FR credentials and expertise⁵

⁴ Per IME policy, all IMESA FR users must be properly trained and pass related testing to ensure proper usage of the software tool.

⁵ A-P-T Research, Inc. is IME's contractor for development of IMESA FR and is one such qualified provider of IMESA FR assessments. Provider fees apply.