

ASD-STE100 Implementation in S1000D: Improving Clarity to Reduce Human Factor Risks and Optimize Translation Costs

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No more than 30 seconds about me!

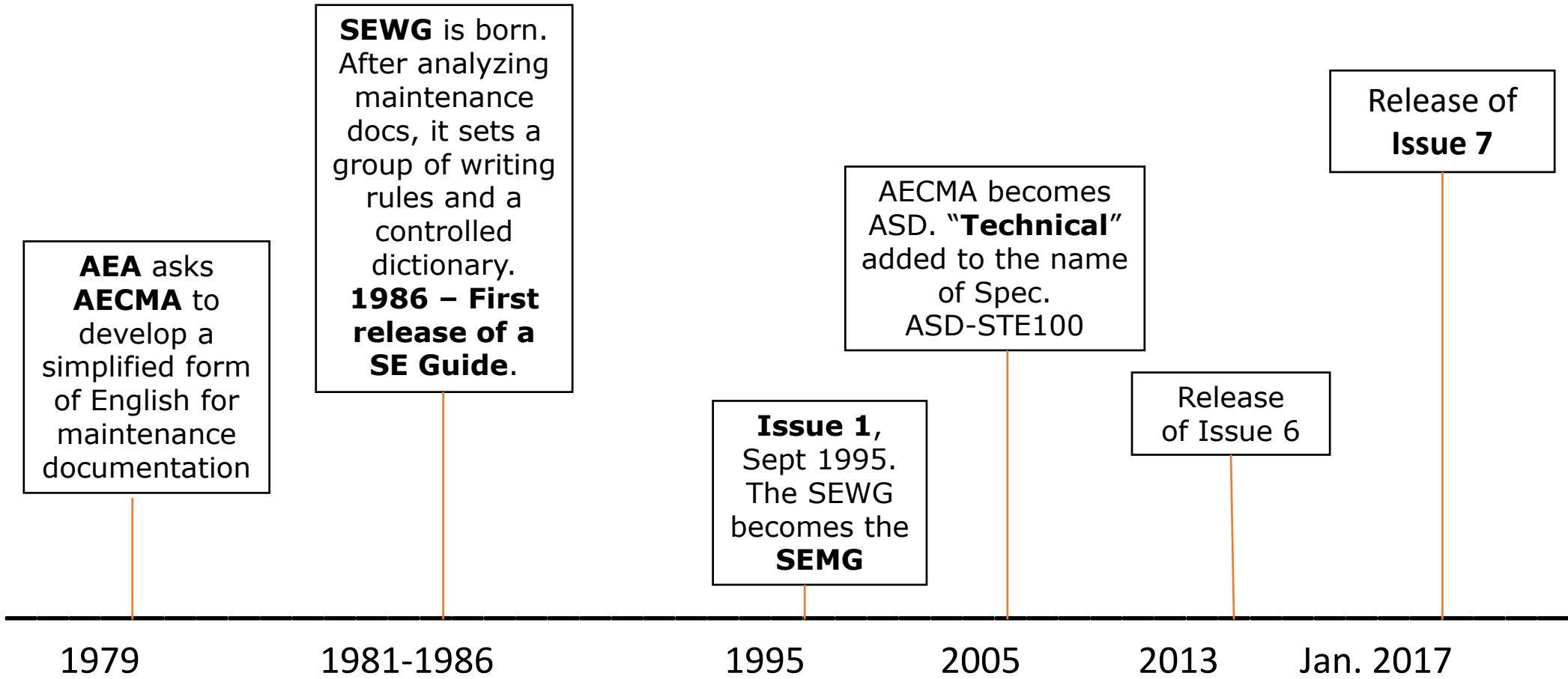


Simplified Technical English Specification ASD-STE100

International Specification for the preparation of technical documentation in a
controlled language



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AEA: Association of European Airlines

AECMA: European Association of Aerospace Industries (*now ASD*)

SEWG: Simplified English Working Group (*now STEMG, Simplified Technical English Maintenance Group*)

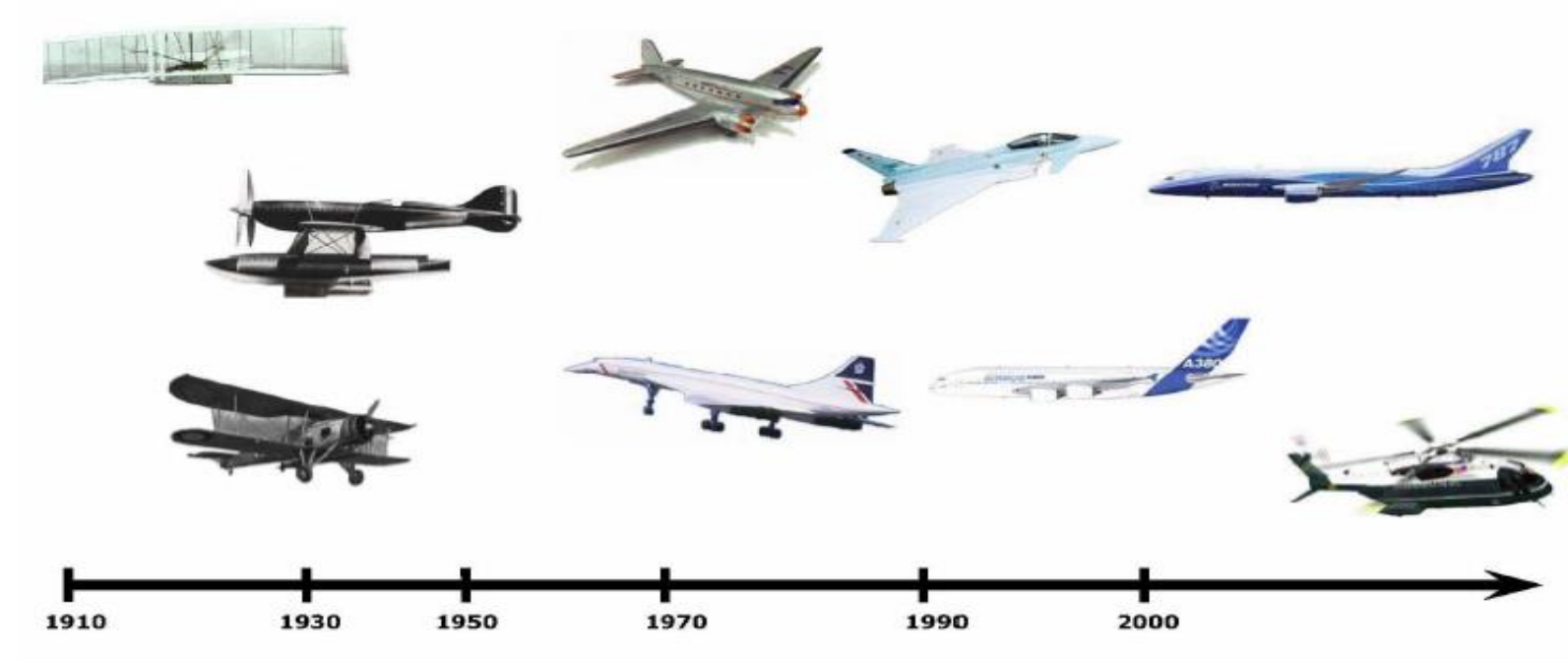
Purpose and objectives of STE

Complex technical instructions can be misunderstood and misunderstandings can lead to accidents.

STE makes technical texts easy to understand by all readers and can be regarded as an important and valuable resource for technical writing to simplify the correct understanding of procedures and operational texts, remove linguistic barriers, and reduce Human Factor risks.

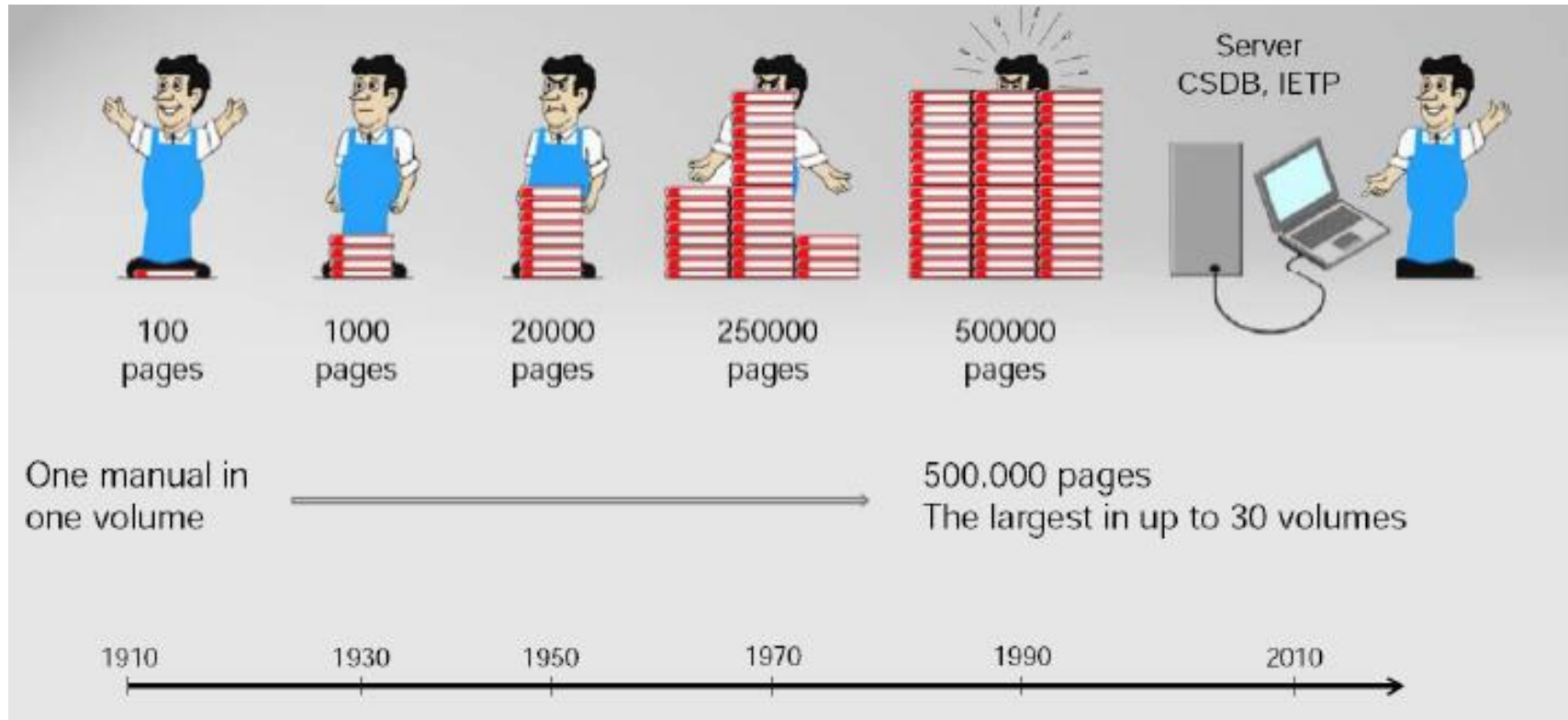
Why a controlled language for aviation?

The increasing complexity of air vehicles



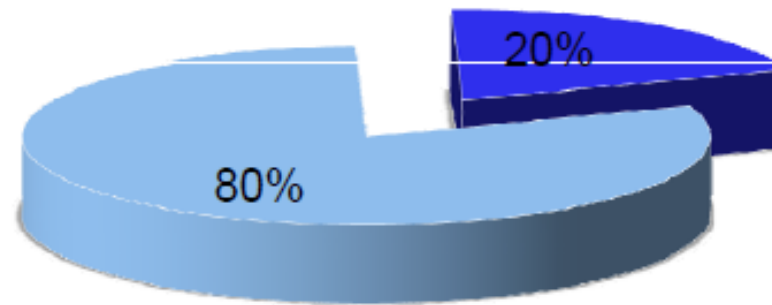
Why a controlled language for aviation?

The increasing complexity of documentation and data



Why a controlled language for aviation?

The increasing number of readers (users) who are non-native English speakers



- Non-English Speaking
- English Speaking

A step back to the Eighties: The ADWG on ASD-STE100 in S1000D

This group realized that their attempts to harmonize specifications and to establish commonality wherever possible had the following major advantages:

- cost saving in information generation - avoidance of duplications
- more economic support planning
- cheaper deliverable publications
- uniformity of standard for participants in the project
- standard format for data exchange to exploit future developments
- enhanced interoperability
- improved opportunity for clarity - use of ASD Simplified Technical English (ASD-STE100®)
- easier and cheaper translation also possible because of ASD-STE100®

Who uses ASD-STE100?

ASD-STE100 was developed for the **aviation industry** and it is a recommendation and a requirement of specifications used for writing technical publications (**S1000D and ATA i2200**)

2 General writing rules

2.1 Language

The project or the organization must specify the language in which the data modules are written. If that language is English, then it is recommended to use the writing rules and vocabulary in ASD Simplified Technical English, ASD-STE100® (formerly known as AECMA Simplified English, AECMA Document No. PSC-85-16598).

Business rule decision point BRDP-S1-00020 - Specify the language:

- Decide which language to use for producing data modules.

Business rule decision point BRDP-S1-00021 - Use of ASD-STE100®:

- When producing data modules in English, decide whether to use ASD-STE100®.

A standard dictionary must also be designated by the project or the organization. If the maintenance data for the data modules is required in the English language, it is recommended that the Merriam-Webster's Dictionary be used as the standard.

Who uses ASD-STE100?

However, **58%** of the ASD-STE100 users are now outside aerospace and defense

Copies of the specification have been requested by:

- **105** different countries worldwide (63% outside Europe)
- More than 250 universities worldwide
- Important companies in various sectors of industries



Who uses ASD-STE100?

USERS

(Data from the STEMG distribution log, Issue 7, January 2017, updated August 11, 2018)

USER SCENARIO	COPIES	%
English-speaking countries	1321	42%
Non-English speaking countries	1846	58%
TOTAL	3167	100%

USER SCENARIO	COPIES	%
New Users	2244	71%
Existing Users	923	29%
TOTAL	3167	100%

Who uses ASD-STE100?

USERS

(Data from the STEMG distribution log, Issue 7, January 2017, updated August 11, 2018)

USER SCENARIO - Fields of activity	COPIES	%ISSUE 7
Aerospace and Defense (inc. Government Agencies)	1137	36%
Language Services, Translations, Technical Documentation	435	14%
Information Technology, Hi-Tech, Software, Telecommunications	414	13%
Airlines and Air Forces	205	6%
Academics, Education and Research	188	6%
Automotive, Railways and Transportation (general including Sea)	179	6%
Mechanical Engineering, manufacturing, and processes	168	5%
Others (different branches of industry)	171	5%
Energy (Oil, gas, electricity, nuclear, etc.)	111	4%
Medical and Healthcare	102	3%
Private (personal use)	57	2%
TOTAL	3167	100%

Advantages of STE

It minimizes language problems for non-native English speakers.

It reduces risks of human error in maintenance work.

It can be adapted to many different domains.

It makes the translatability of English text easier.

In the words of an end user

“As an end user (I was a helicopter avionics technician in the armed forces for 6 years), using it is a delight.

'Replace' does not mean the same as 'fit new'. 'Inspect' and 'examine' are not the same and it is so much easier when you know exactly what the instructions are telling you to do and - believe me - **when you are balanced at the top of a ladder at the far end of an airfield in pouring rain at 2 am in the morning struggling to fit a replacement component on the tail of a helicopter, you appreciate clear instructions.”**

Simon North, *Technical Writer*

What is ASD-STE100?

The ASD-STE100 Specification:

- Is a set of **writing rules** (53, in 9 sections) and a **dictionary of controlled vocabulary**(864 approved words).
- Makes technical texts **easy to understand** especially for non-native speakers of English
- Has a **controlled general vocabulary**
- Has **sufficient words** to write all technical sentences
- Is **adaptable** and **flexible**
- Permits the use of **company terminology**
- Permits the use of **common engineering and scientific terms**
- Permits the use of **only one language** for technical documentation.
- Where possible, especially outside aerospace and defense, permits the **creation of other controlled languages** different from English
- Helps the **translation** of English texts into other languages
- Helps the Machine Translation process.

Benefits of a controlled language in translation

By addressing difficulties related to complex sentence structures, confusing word forms and ambiguous vocabulary, the principles of STE can dramatically improve the **reading quality** of technical documentation in any industry.

Advantages in the translation process are directly related to the **reduced chance of ambiguity**.

Benefits of a controlled language in translation

As a controlled language, STE helps streamline the translation of technical documentation in terms of **time** and **cost efficiency**.

Furthermore, by using STE, it is possible to reduce the word count by at least **20%** compared to the same content written in standard English, with further **optimization of translation costs** and editing time through high repetition matches.

The STEMG (STE Maintenance Group)

 	 
 	  <p>& Wings Team</p>
 	 <p>BOMBARDIER</p> <p>Aerospace Industries Association of Canada / L'Association des industries aérospatiales du Canada</p>
 	
 	 
 	   

Maintenance of the Specification

The **STEMG** maintains the ASD-STE100 specification.

The STEMG meets twice a year to **maintain, update and continue developing** the ASD-STE100 spec.

Users send **Change Forms** that are analyzed by the STEMG during the meetings.
Usually, every 3 years a new issue is released.

Change Form

Change form for ASD Simplified Technical English (ASD-STE100)

<p>Use this change form if you think a change is necessary. Send the form to the ASD STEMG info@asd-ste100.org or to one of its representatives.</p>	
<p>Word or writing rule:</p>	
<p>Amendment / addition / deletion that you think is necessary:</p>	
<p>Purpose of the amendment / addition / deletion:</p>	
<p>Example(s) of use. If possible, supply sufficient examples from your technical documentation to support your proposal:</p>	
<p>Suggested meaning or suggested alternative:</p>	
<p>Sent by: Company or organization: Phone: Email:</p>	<p>Date:</p>
<p>ASD STEMG assessment and decision:</p>	<p>Date:</p>

One word, so many meanings!

The selection of words is not easy.

Customers can make technical mistakes because they misunderstand texts that we think are written in good English.

"Round the edges of the round cap. If it then turns round and round, as it circles round the casing, another round of tests is required."



Writing around

Make the edges of the circular cap rounded. If it then makes a continuous circular movement when you install it on the casing, more tests are necessary.

Make sure that the cap is fully circular and if it is not, remove all rough edges. But if the cap turns continuously around its axis while it goes around the casing, you must do the test procedure again.

- 1. Make sure that the cap is rounded.**
- 2. If it turns on its axis while it moves around the edge of the casing, more tests are necessary.**

Take a guess...

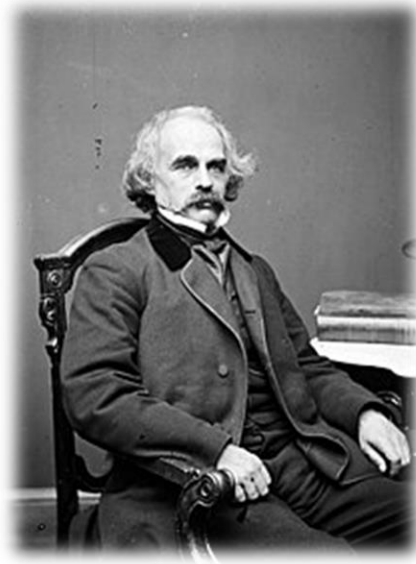
“Turn on the engines not required”

1. Not necessary to turn the engines on
2. Do not turn the engines
3. Make sure you turn off the engines
4. Turn off the engines that are not required
5. All engines should be turned off



In the words of a great American novelist

“Easy reading is damn hard writing.”



Nath' Hawthorne

ASD-STE100 Specification



Writing Rules



Dictionary

PART 1 – WRITING RULES

There are **53** writing rules in STE included in **nine** sections:

Section 1	Words
Section 2	Noun clusters
Section 3	Verbs
Section 4	Sentences
Section 5	Procedural writing
Section 6	Descriptive writing
Section 7	Safety instructions
Section 8	Punctuation and word count
Section 9	Writing practices

Which words can you use?

- Rule 1.1** You can use words that are:
- Approved in the dictionary
 - Technical names
 - Technical verbs.

Examples:

The word “**use**” is an approved word in the dictionary.
The word “**engine**” is a technical name.
The word “**ream**” is a technical verb.

Part of speech

Rule 1.2 Use approved words from the dictionary only as the part of speech given.

The word “test” is an approved noun, but not an approved verb.

Test B is an alternative to test A.

Test the system for leaks.

Do the leak test of the system.

or

Do a test for leaks in the system.

Part of speech

Rule 1.2 Use approved words from the dictionary only as the part of speech given.

*The word “**dim**” is an approved adjective, but not an approved verb.*

The lamp comes on with a dim light.

Dim the lights.

The lights in the cabin become dim.

Approved meaning

Rule 1.3 Use approved words only with their approved meaning.

*The approved meaning of the word “**follow**” is “**come after**” and not “**obey**”.*

Follow the safety instructions.

Obey the safety instructions.

But you can write:

Follow the green lights to the nearest staircase.

Do the procedures that follow:

Technical names

Rule 1.5 You can use words that you can include in a technical name category.

- 1. Names in the official parts information** (for example, Illustrated Parts Catalog or engineering drawing)
bolt, cable, clip, connector, engine, filter, light, pipe, propeller, screw, switch....
- 2. Names of vehicles or machines and locations on them**
aircraft, bicycle, car, fuselage, helicopter, ship, submarine, tank, train, wing...
- 3. Names of tools and support equipment, their parts and locations on them**
brush, clamp, cover, display, file, handle, rope, test rig, torque wrench...
- 4. Names of materials, consumables, and unwanted material**
adhesive, compound, detergent, dirt, dust, fuel, grease, oil, paint, primer, sealant, solvent...
- 5. Names of facilities, infrastructure, their parts, and locations**
airport, building, gate, hangar, port, service bay...

Technical names

6. **Names of systems, components and circuits, their functions, configurations, and parts:**
air-conditioning, audio, aural warning system, standby mode...
7. **Mathematical, scientific, and engineering terms:**
Acceleration, capacitance, carbon, center, circle, coefficient, curve, diameter, electricity, force, geometry, graph, gravity, hardness, heat treatment, idle speed, ignition, light, load, momentum, oxygen, performance, polarity, power, pressure, ratio, reduction, signal, strength, temperature, tension, torque, voltage...
8. **Navigation and geographic terms:**
Air, altitude, axis, clearance, east, France, gradient, heading, landing, Lima, north, pitch, roll, skid, south, west...
9. **Numbers, units of measurement and time:**
92, 303, Ampere (A), Degree ($^{\circ}$), First, half, hour (h), kilogram (kg), meter (m), mile, month, one, one-quarter, second ("), second (s), second, square inch (sq.in.), spring, third, three, year, winter, zero...
10. **Quoted text such as that on placards, labels, signs, markings, and display units:**
Abort button, EXIT sign, ON position, NEXT button, FAULT legend, WEAR PROTECTIVE CLOTHING sign...
11. **Names of persons, groups, or organizations:**
Air traffic control, captain, crew, European Aviation Safety Agency (EASA), Federal Aviation Administration (FAA), manufacturer, operator, Transport Canada Civil Aviation (TCCA)
12. **Parts of the body:**
Blood, digestive system, ear, eyes, hair, hand, head, lung, mouth, skin, stomach
13. **Common personal effects:**
Lighter, clothing, food, footwear, high-heeled shoes, jewelry, lipstick, matches, nail scissors, perfume, shampoo

Technical names

14. Medical terms:

Allergy, aspirin, asthma, circulation, dermatitis, headache, heart rate, medication, nausea, pulse, skin Irritation

15. Names of official documents and parts of documentation (this includes manuals, technical records, standards, specifications, and regulations):

Acceptance Test, attention, caution, chapter, Checklist, Cleaning, danger, diagram, Fault Isolation, figure, letter, note, notice, packaging, page, parentheses, preservation, reference, section, storage, transportation, warning...

16. Environmental and operational conditions:

Atmosphere, cloud, day, daylight, ice, humidity, lightning, moisture, night, rain, sand, snow, storm, wind...

17. Colors:

Beige, cyan blue, dark brown, magenta, light green, orange, red, white, yellow

18. Damage terms:

Buckle, chafing, corrosion, crack, crack propagation, deformation, dent, discoloration, distortion, erosion, fracture, fraying, galling, kink, nick, score, scratch, stain, spurious fault message

19. Information technology and telephony terms:

Arrow, backup, backup file, bookmark, cursor, database, dialog check box, e-mail, field, file, firewall, HTML, icon, interface, internet, laptop, memory, menu, mouse, network, operating system, phone, pre-loaded software, smartphone, status bar, tablet, toolbar, touchscreen, update, voice mail, XML...

Technical names

Rule 1.6 Use a word that is unapproved in the dictionary only when it is a technical name or part of a technical name.

Make sure that the two spigots at the base of the unit engage.

("Base" is an unapproved word that is related to a surface.)

Make sure that the two spigots at the bottom of the unit engage.

The base of the triangle is 5 cm.

("Base" is a technical name, category 7, mathematical, scientific, and engineering terms.)

Access to the base is permitted between 9 a.m. and 6 p.m.

("Base" is a technical name, category 5, names of facilities, infrastructure, their parts, and locations.)

Technical names

Rule 1.10 Do not use slang or jargon words as technical names.

Make a sandwich with two washers and the spacer.

Install the spacer between the two washers.

Spelling

Rule 1.14 Use American English spelling.

The door is made of carbon fibre reinforced plastic.

The door is made of carbon fiber reinforced plastic.

Change the colour of the display.

Change the color of the display.

Sentences

Rule 4.2 Do not omit words or use contractions to make your sentences shorter.

Do not omit verbs.

Rotary switch to INPUT.

Set the rotary switch to INPUT.

Do not omit articles.

Remove the bolt and stop.

Remove the bolt and the stop.

Sentences

Rule 4.2 Do not omit words or use contractions to make your sentences shorter.

Do not omit the subject.

If installed, remove the shims.

If shims are installed, remove them.

Can be a maximum of five inches long.

Cracks can have a maximum length of five inches.

Summary of writing rules...

- Use the approved words and only as the part of speech given in the dictionary.
- Make the instructions as clear as possible.
- Do not write more than 3 nouns together.

Summary of writing rules...

- Use the active voice as much as possible in descriptive texts.
- Do not use passive voice in procedures.
- Write short sentences.

Instructions (procedures) → 20 words.

Descriptive texts → 25 words.

- Use vertical lists for complex text.
- Write one instruction per sentence.

Summary of writing rules

- Write only one topic per paragraph.
- Do not write more than 6 sentences in each paragraph.
- When you count words for sentence length, titles, placards and quoted text count as one word.
- Start the safety instructions with a clear instruction.

PART 2 – DICTIONARY

There are **864 approved words** in STE. The Dictionary has **four** columns:

- The **word** and the **part of speech**
- The **approved meaning** or **ALTERNATIVES** for each word
- **APPROVED** examples
- Examples that are **not approved**

Column 1 – Word (part of speech)

Word (part of speech)	Approved meaning/ ALTERNATIVES	APPROVED EXAMPLE	Not approved
ABRASIVE (adj)	That can remove material by friction	DUST, WHEN MIXED WITH OIL, HAS AN ABRASIVE EFFECT.	
AID (n)	Help that is given	IF YOU GET THE SOLUTION IN YOUR EYES, GET MEDICAL AID IMMEDIATELY.	

Word (part of speech)	Approved meaning/ ALTERNATIVES	APPROVED EXAMPLE	Not approved
extremely (adv)	VERY (adv)	IT IS VERY IMPORTANT TO OBEY THE FUEL SAFETY PRECAUTIONS.	It is extremely important to obey the fuel safety precautions.
increase (n)	INCREASE (v)	THE TEMPREATURE MUST INCREASE.	There must be an increase in temperature.

Column 2 – Approved meaning/ALTERNATIVES

Word (part of speech)	Approved meaning/ ALTERNATIVES	APPROVED EXAMPLE	Not approved
BEHIND (prep)	In a position at the rear of	THE PUMP IS INSTALLED BEHIND THE HYDRAULIC MOTOR.	

Word (part of speech)	Approved meaning/ ALTERNATIVES	APPROVED EXAMPLE	Not approved
addition (n)	ADD (v)	TO GET THE CORRECT CLEARANCE, ADD SPECIAL SHIMS, AS NECESSARY.	Adjust the clearance by the addition of special shims, as necessary.

Column 3 – APPROVED EXAMPLE

Word (part of speech)	Approved meaning/ ALTERNATIVES	APPROVED EXAMPLE	Not approved
A (art)	Function word: indefinite article	A FUEL PUMP IS INSTALLED IN ZONE 10.	
main (adj)	PRIMARY (adj)	THE PRIMARY CAUSE OF VALVE FAILURE IS CONTAMINATION OF HYDRAULIC FLUID.	The main cause of valve failure is contamination of hydraulic fluid.
manufacture (v)	MAKE (v)	YOU CAN MAKE THE CLEARING TOOL LOCALLY.	The clearing tool can be manufactured locally.

Column 4 – Not approved

Word (part of speech)	Approved meaning/ ALTERNATIVES	APPROVED EXAMPLE	Not approved
induce (v)	CAUSE (v)	SCRATCHES IN THE WINDSCREEN CAN CAUSE CRACKS.	Scratches in the windscreen may induce cracking.
instead (adv)	ALTERNATIVE (n)	USE A SPATULA AS AN ALTERNATIVE.	Use a spatula instead.

Interested in learning more about STE?

ASD STEMG official website <http://www.asd-ste100.org>

ASD STEMG Facebook Page <https://www.facebook.com/asdstemg>

In-person ASD certified training by STEMG members

<http://www.asd-ste100.org/membership.html>

Online ASD certified training at UniNettuno

<https://www.uninettunouniversity.net>

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Thank you
for your attention!

Questions?