

Wildlife & FOD Workshop

24- 26 March 2014
Cairo, Egypt

A MID Region Wildlife& FOD Risk Reduction Program

Session #7 Presentation #1





Foreign Object Elimination Program

ICAO Wildlife and FOD Workshop
Cairo, March 24th – 25th, 2014

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Foreign **O**bject **E**limination

Agenda

1. Main concepts
2. Organization
3. FOE & 5S
4. Main procedures

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Concept

The Objectives of the FOE program are:

- **Prevent** accidents and incidents
- Maintain **safety and quality** of Embraer product
- **Eliminate** Foreign Object from aircraft or aerospace products, systems and operational areas
and consequently ...
- Maintain the **good image** of the company

Concept

The basic objective of the program is the elimination of foreign objects since they can degrade the image of an organization, cause damage to products with high cost involved or injuries to persons...

...but all efforts and actions of Embraer FOE Program converge to a main objective: to prevent FOs from causing aircraft accidents, endangering human lives.



Concept

Definitions (ENS-xxxxxx / NBR-15169 / NAS 412):

FOE: Foreign Object Elimination is a Program

FO: Any Foreign Object found where it should not be and which would potentially cause damage to an aircraft

FOD: Damage caused by a FOs



In short: FO is anything (stone, piece, rivet, tool, oil, person, animal, equipment, etc.) that is at the wrong place or time in relation to the aerospace product.

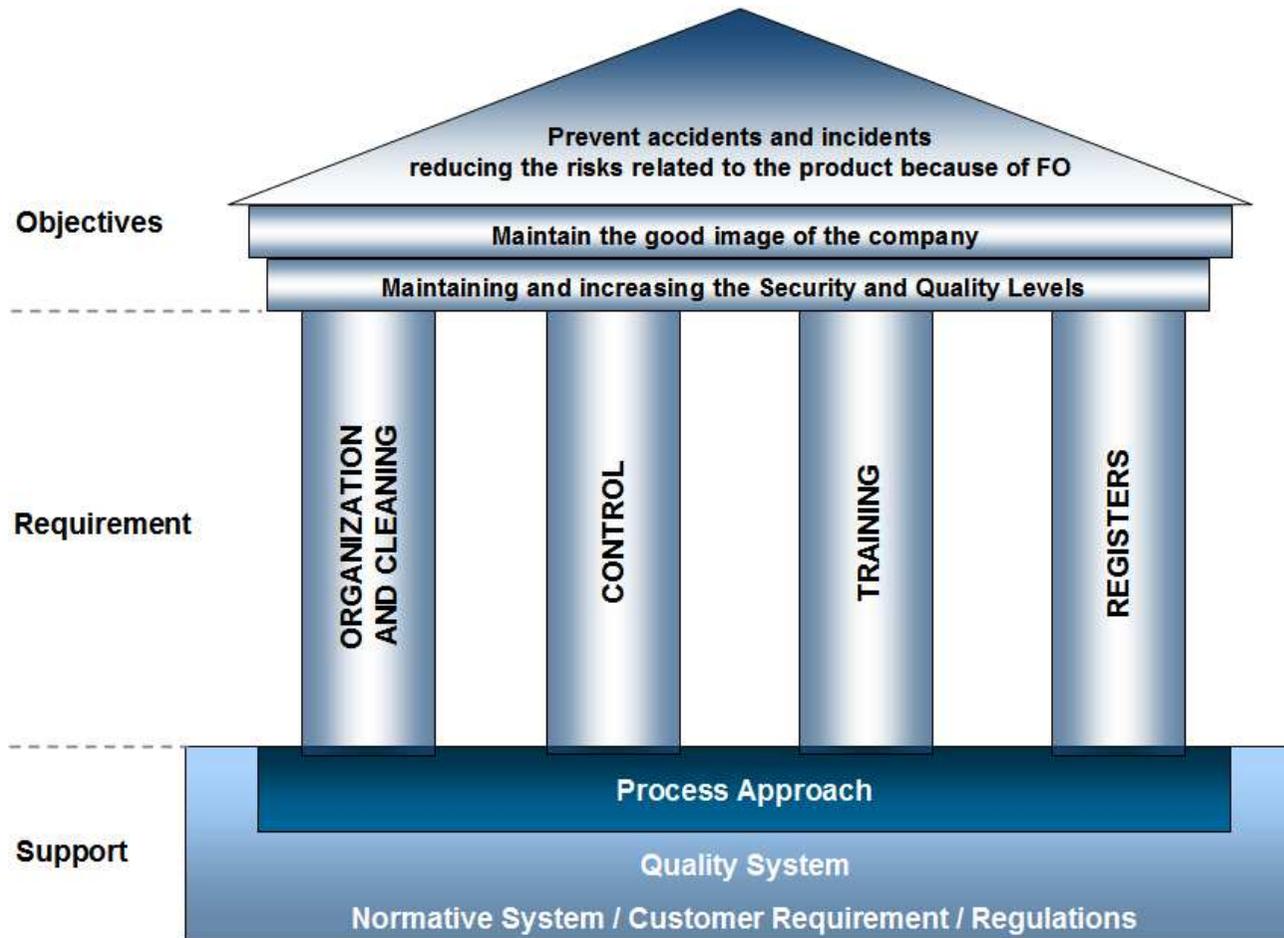
Human Factors and FOE Program

The main causes of Foreign Objects

- ✓ Routine change;
- ✓ Missing or inadequate planning to make changes;
- ✓ Little attention in cleaning and organization;
- ✓ Non-compliance of procedures;
- ✓ Hurry in place of fast;
- ✓ No management involvement with the FOE Program;
- ✓ Absence of training or retraining.

Concept

FOE Program Structure

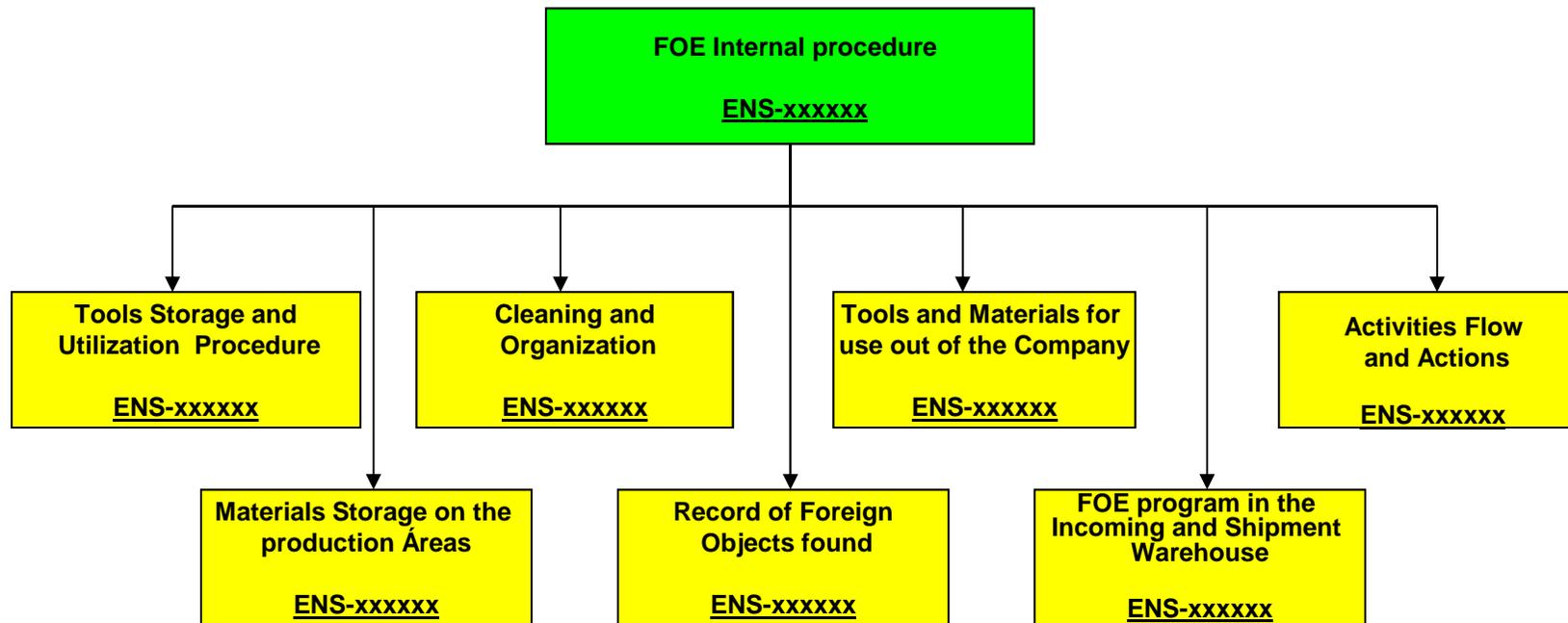


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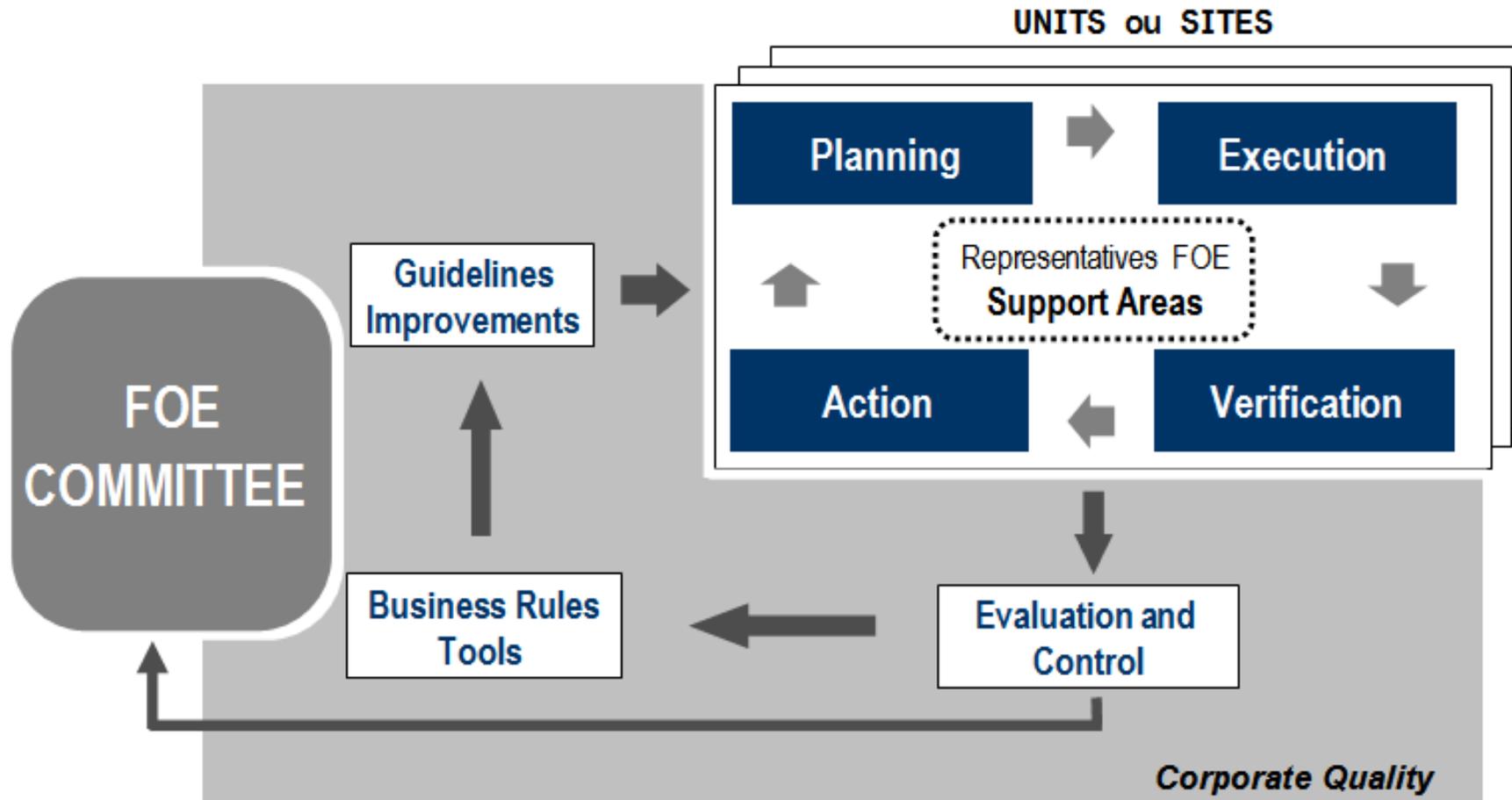
Organization

FOE Internal Procedures Structure



Organization of the Embraer FOE Program

The FOE Committee is composed by employees of the company operational areas who meet regularly to discuss the results of the period.



Organization

Embraer FOE Program is present in all company units, at the areas of production, logistics, maintenance, infrastructure and especially in the areas of aircraft operation.

All employees directly or indirectly involved with the production process must be trained and familiar with the foreign object elimination program.



Organization

Embraer Headquarters and Main Facilities - SJK - Brazil



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Organization - Training and Refreshment

For an effective and comprehensive control, everyone in the organization must be committed to the requirements and actions of the FOE Program. The initial and the periodic refreshment trainings are mandatory and essential to the success of this program! The refreshment training has to be done every other year.



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FOE & 5S

The **FOE Program** promotes:

Cleaning, organization, control of tools, components, materials, etc, which are important for a healthy and pleasant working environment, **safety** and for continuous improvement of **quality** and **productivity**.

The FOE program makes use of 5S principles as a basis for starting a Foreign Object Elimination Program in an organization



FOE & 5S

FOE Program and 5S

SEIRI - Sense of Use

Eliminate all unnecessary tools and parts. Keep only essential items and eliminate what is not required.



Some results obtained with the application of the 1º S:

- Gain space
- Facility cleaning and maintenance
- Better control of inventories
- Preparing the environment for the application of other concepts of the 5S

FOE & 5S

FOE Program and 5S

SEITON - Sense of Ordination

Set standards (tags, shelving, etc), have a place for everything and put everything in its place, clean and ready for use.



Some results obtained with the application of the 2^o S:

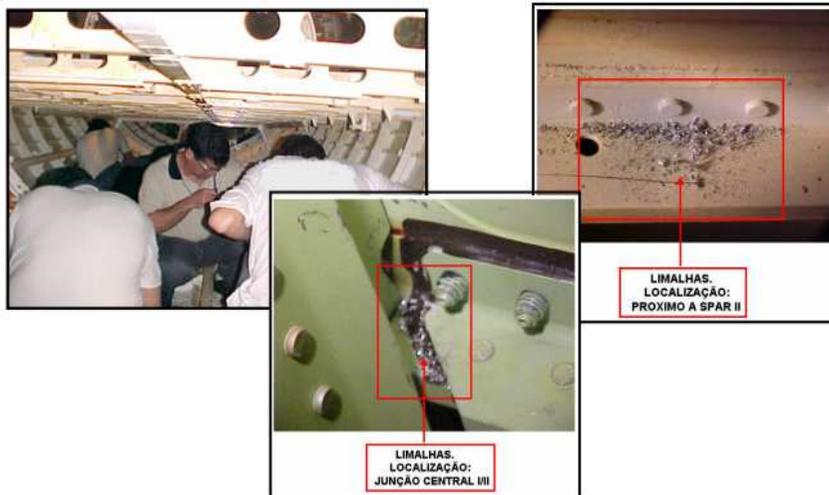
- Time saving
- Ease to locate tools
- Reduction of unsafe points (loss of tools)

FOE & 5S

FOE Program and 5S

SEISO – Sense of Cleaning

Systematic daily cleaning and inspection of work areas and equipment, eliminating items that may become a FO.



Some results obtained with the application of the 3^o S:

- Healthy and pleasant environment
- Reducing the possibility of incidents / accidents with FOs
- Best conservation of tools and equipment

ATTENTION: remember ALWAYS the philosophy “Clean as you go”

FOE & 5S

FOE Program and 5S

SEIKETSU - Sense of Standardization

Define routines for cleaning of common areas. This sense helps in strengthening 5S culture and maintain the first 3 Ss.



Some results obtained with the application of the 4^o S:

- **Ease localization and identification of objects and tools**
- Improvement of common areas
- Improvement in safety conditions

FOE & 5S

FOE Program and 5S

SHITSUKE - Sense of Discipline

Internalize ethical and moral standards. Do what needs to be done, meeting the current requirements



Some results obtained with the application of the 5^o S:

- Best quality, productivity and safety at work
- Pleasurable daily work

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Main procedures

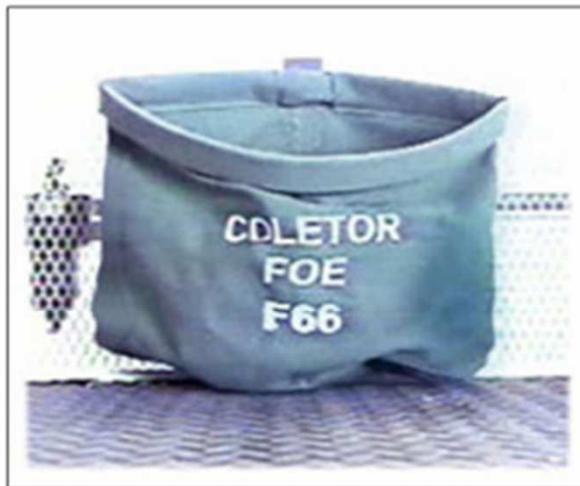
Cleaning and monitoring

- Daily mechanized cleaning
- Manual Cleaning



Main procedures

Residue Collecting System in the production process



FO Collector



Main procedures

Protections and Cautions

Use of protections during overnight and normal parking to prevent contamination



Main procedures

Personal Belongs

When any employee identifies that a personal uncontrolled belonging goes missing (e.g. glasses, consumables, etc.), the supervisor must be notified immediately. He/she will analyze the occurrence and take the appropriate measures.

Relevant: Just culture. The employee must be assured that he/she will not be punished for having lost something.

(For example: Glasses, calculators, Jump drives, palm tops, watches, mobiles, Keys.etc...)

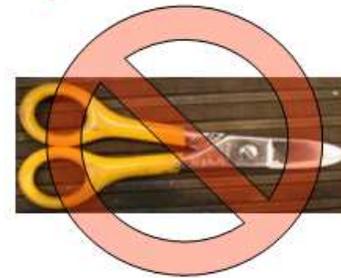


Main procedures

Customer Integration with FOE Programs

All customer representatives or partners that arrive on the company to work on the operational areas will be trained in the FOE basic procedures before start their activities

Private tools are not permitted for employees, partners and customers. Special tools when necessary shall be authorized and identified by Embraer.



In case of anything lost, the responsible contracts administrator shall be informed immediately

Main procedures

Foreign Object found at delivered aircraft

After notification of a foreign object found inside of delivered aircraft, the quality department shall open an investigation to confirm if the origin is the production process. If it is confirmed, a Quality Escape Note shall be issued.

Additionally, the quality department shall open a PP Note (process non conformity), for the root cause investigation and address the prevention action have to taken to prevent reoccurrence.

Feed back about root cause investigation Results and prevention action taken to the Customer



Records

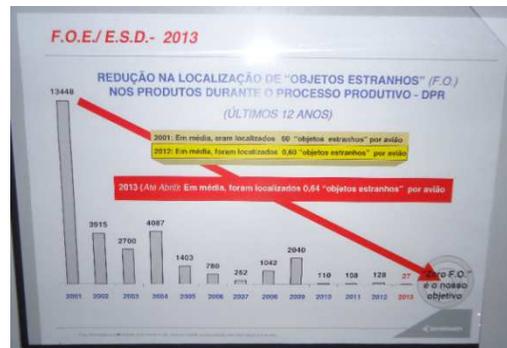
FOE Board Display



Recognition of the responsible for cleaning (service provider)



FOE Program evolution
FO found by year



Metrics FO's found inside the Product



Metrics of FO's found by areas



Questions?



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Obrigado!

Thank you!

