

Recycling Best Management Practice (BMP) for Management of Used Aircraft Parts and Assemblies

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BEST PRACTICES

ARTICLE 1 – OVERVIEW

This Best Management Practice is published and maintained by the Aircraft Fleet Recycling Association (AFRA). AFRA is a non-profit association composed of companies of common interest and focus regarding with world's older aircraft fleet. AFRA was formed by eleven charter companies in June 2006 with the mission to organize and present an industry perspective on aircraft sustainability via the development and recommendation of best practices and technologies for the management of the world's older fleet.

A specific goal identified during the Chartering activities was the commitment to complete AFRA best management practice (BMP) documents on the Management of Used Aircraft Parts and Assemblies and the Recycling of Used Aircraft Materials, Parts and Assemblies. These BMP documents were published as stand-alone documents in 2008 and 2012 respectively. Those publications met the initial AFRA obligations.

This document represents a collection of recommendations concerning best practices for the recycling of parts and materials that are recovered from an aircraft, engine or other asset during the recycling of the asset at the end of its service life.

Supporting this Recycling BMP are the following separate documents:

- *Recycling Practice Guide and Minimum Standards.*
- *Recycling Auditing Guidance Checklist.*

Facilities considering accreditation for Disassembly must consult these separate documents:

- *Disassembly BMP.*
- *Disassembly Practice Guide and Minimum Standards.*
- *Disassembly Auditing Guidance Checklist.*

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These documents are intended to conveniently address all of the AFRA BMP requirements, but it is not expected that all facilities will meet each separate BMP standard. AFRA Recognizes that facilities may meet one, or more than one, separate BMP standard.

The recycling BMP is intended to guide aspects of the processing of aerospace materials in order to transform these into usable materials.

This document provides guidance by providing Best Practices, which are auditable standards.

The separate *Recycling Practice Guide and Minimum Standards* provide guidance about how to meet these Best Practices. It contains:

- Practice Guides which reflect advice from AFRA on how to meet the principles established by the Best Practices. Generally, they reflect one way but not necessarily the only way to meet the Best Practice. In some cases they might reflect the only practical manner in which to meet the Best Practice, and in other cases a Facility may employ other approaches that could be judged to meet the Best Practice, and
- Minimum Standards, which each state the minimum requirement in order to pass the AFRA BMP audit on the first audit. A company that does not meet the minimum standard will not pass the audit. Minimum standards do not take the place of the BMP Best Practice Standards; they are advisory in nature and they are meant to establish minimum levels for companies new to the industry. Companies are expected to evolve their own quality systems beyond the Minimum Standards in order to meet the intent of the BMP Standards. As the industry evolves, AFRA expects that the AFRA BMP Committee will raise the Minimum Standards.

The separate *Recycling Auditing Guidance Checklist* provides a means to demonstrate compliance. They show the likely locations for evidence of compliance, and are meant to be an auditing tool. Companies seeking to obtain accreditation to the BMP will be expected to assist the AFRA auditor by submitting a completed checklist with references as to where evidence of compliance for each auditing element may be found (this is provided prior to the

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audit, as directed by the Association or auditor). Companies are also advised to rely on the appropriate checklist as an element of their internal self-audit.

BMPs are voluntary standards, and AFRA imposes no legal obligation for any entity to follow the standard. For entities that choose to follow the BMPs, AFRA has developed and implemented a certification program through which AFRA audits and certifies a company's compliance to the BMP.

AFRA maintains copyright in these BMPs. AFRA also uses the name of the Association and the name of these Best Management Practices as valuable commercial marks. No person may advertise that he, she or it has been found by AFRA to be in compliance with this standard unless that person has signed an appropriate contract with AFRA and been found by AFRA to be in compliance with this standard. When a Facility is audited by AFRA for compliance to one or more of these BMPs, the Facility will be expected to comply with the appropriate BMP(s), but not the Practice Guides. The Practice Guides are offered as one way, but not the only way, to meet the requirements of the applicable BMP.

ARTICLE II – DEFINITIONS AND BMP SYSTEM REQUIREMENTS

Article II a) Definitions. For the purposes of this BMP, the following underlined terms are defined:

Best Practice means a practice that is specifically recommended by this document. It does not necessarily infer that a related regulatory mandate exists (nor that such a mandate should exist). If a Facility voluntarily chooses to comply with this Best Management Practice, then in order to remain in compliance, the Facility must follow each Best Practice found in this document as determined by the AFRA certification process.

Customer: In the context of recycling of materials, the **Customer** means the owner of the Materials for Recycling for whom the recycling is being performed. If the Facility owns the Materials for Recycling, then the Facility is also the Customer in this context.

Discard, when used in reference to an Asset, means to dispose of the remainder of the Asset in a permissible manner – including all parts and assemblies that are not being retained as airworthy aircraft parts through the disassembly process. This can include one or more of the following: selling the remainder of the Asset to a third party in accordance with agreements with the Customer, destroying or scrapping the Asset, recycling all or a portion of the Asset, etc.

The **Facility** means the business that is seeking to comply with this BMP, for recycling of materials. This term is not necessarily meant to imply a geographically fixed operation; meaning that the term “Facility” may refer to a business that goes to the specific location of Materials for Recycling in order to recycle it, and the Facility may operate at more than one geographical location. The Facility is expected to comply with all laws and regulations applicable to its jurisdiction.

Key Performance Indicators, KPIs, are those that measure the behavior and performance of a system. It’s a set of quantifiable measurements that a facility uses to gauge its performance over time. For Facilities which voluntarily employ KPIs, AFRA will recognize one of four levels of implementation: Bronze, Silver, Gold or Diamond. Recognition consists of

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acknowledgement of the compliant level in the accreditation information listings.

Material for Recycling means the materials that are offered or provided to a Recycling Facility in anticipation that they may be recycled.

A **Minimum Standard** states the minimum requirement in order to pass the AFRA BMP audit on the first audit. A Facility that does not meet the minimum standard will not pass the audit. Minimum standards do not take the place of the BMP Best Practice Standards; they are advisory in nature and they are meant to establish minimum levels for companies new to the industry.

Facilities are expected to evolve their own quality systems beyond the Minimum Standards in order to meet the intent of the BMP Standards. As the industry evolves, AFRA expects that the AFRA BMP Committee will raise the Minimum Standards.

Part means any component, part, sub-part, assembly, sub-assembly, or other item removed from the Asset.

Where the term **Periodic** is used in this BMP, the period referenced is considered to be annual, except when specified otherwise.

Practice Guides reflect advice from AFRA on how to meet the principles established by the Best Practices. Generally, they reflect one way but not necessarily the only way to meet the Best Practice. In some cases they might reflect the only practical manner in which to meet the Best Practice, and in other cases a Facility may employ other approaches that could be judged to meet the Best Practice.

Procedure means a written method or practice for accomplishing a task.

Recycled Material means the materials that are yielded by a Recycling Facility following recycling activities.

Recycling means a series of activities in which material is processed into specification- grade commodities, and consumed as raw-material feedstock, in lieu of virgin materials, in the manufacture of new products. The series of activities that make up recycling include the collection,

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processing and subsequent consumption of industrial, end of life and obsolete scrap, as well as the process of transforming used products, whole or in part, into reusable commodities

NOTE: Facilities desiring to be accredited for Recycling must have the auditable means to perform recycling as described, at a fixed, remote or contracted area.

Article II b) BMP System Requirements

BEST PRACTICE (II)(b) 1 - Each accredited company shall have a BMP Manual.

BEST PRACTICE (II)(b) 2 - The BMP Manual is made up of all of the Procedures reflecting the company's compliance with this BMP.

BEST PRACTICE (II)(b) 3 - This BMP manual may be part of another manual system, and/or it may incorporate and/or commingle issues that are not reflected within this BMP; however the procedures found within the BMP Manual should include references to the BMP sections that they are each designed to meet, either in the procedures themselves, in the headings to the procedures, or in an index to the BMP Manual and its procedures.

BEST PRACTICE (II)(b) 4 - The BMP manual must have a change management tracking system, such as a list of sections affected that tracks the revision history of the BMP Manual.

ARTICLE III - FACILITY (including infrastructure & management process)

Article III a) - Location characteristics; Identification and Compliance with Relevant Standards

BEST PRACTICE (III)(a) 1 - The Facility shall have a fixed location for recycling, or a procedure for assuring that the location for recycling is adequately prepared, or both.

BEST PRACTICE (III)(a) 2 - If the Facility has a fixed location for recycling, then the Facility shall identify, and ensure compliance with, applicable environmental laws and standards.

BEST PRACTICE (III)(a) 3 - If the Facility recycles materials at locations remote from the Facility's main location(s), then the Facility shall have one or more procedures designed to identify, and ensure compliance with, applicable environmental laws and standards.

BEST PRACTICE (III)(a) 4 - If the Facility has a fixed location for recycling, then the Facility shall identify, and ensure compliance with, applicable occupational health and safety laws and standards.

BEST PRACTICE (III)(a) 5 - If the Facility recycles materials at locations remote from the Facility's main location(s), then the Facility shall have one or more procedures designed to identify, and ensure compliance with, applicable occupational health and safety laws and standards.

Article III b) - Security

BEST PRACTICE (III)(b) 1 - The Facility shall establish a secure area in which recycling will take place.

BEST PRACTICE (III)(b) 2 – The Facility shall establish procedures and infrastructure to prevent material from leaving the Facility in a manner inconsistent with the intent of the Facility.

BEST PRACTICE (III)(b) 3 – The Facility shall establish procedures and infrastructure to prevent unwanted material from entering the Facility.

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Article III c) – Storage and Segregation of Materials

BEST PRACTICE (III)(c) 1 – The Facility shall have a process for material control, which meets the following standards:

- (i) ensures that Recycled Material is segregated (by material) according to commercially reasonable standards or standards defined in a customer contract;
- (ii) effectively segregates all Recycled Material that are intended to be transferred as aerospace materials, or as having been derived from an aviation or aerospace source, from those that are not intended to be described in this way;
- (iii) documents the segregation mechanisms.

BEST PRACTICE (III)(c) 2 – When a specific customer provides written requirements that their materials be segregated from other materials, the Facility shall have a procedure for ensuring that these customer segregation requirements are followed.

Article III d) – Inventory Accounting & Audits

BEST PRACTICE (III)(d) 1 - The Facility shall have a procedure for periodic internal audits to the BMP Checklist.

BEST PRACTICE (III)(d) 2 - The Facility shall have a procedure for retaining documentation of periodic internal audits on how the company is following this Guidance, including results, and (where necessary) root-cause analysis, and corrective actions taken. Records required for the purpose of this best practice article must be kept for a period of at least two (2) years.

BEST PRACTICE (III)(d) 3 - A recycling Facility shall have a procedure for periodic verification of quality of recycled materials through auditing controls and procedures.

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BEST PRACTICE (III)(d) 4 - In the event that periodic verification shows an unexplained loss, or a failure to meet the Facility's quality expectations, the Facility shall investigate and seek an explanation for the loss or failure.

BEST PRACTICE (III)(d) 5 - Following investigation of a loss, the Facility shall develop and implement appropriate corrective action.

BEST PRACTICE (III)(d) 6 – A recycling Facility shall have a procedure for periodic verification of quantity of recycled materials through auditing controls and procedures.

Article III e) – Process Flow and Process Management

BEST PRACTICE (III)(e) 1 – The Facility should have a diagram that is marked to show process and / or material flow through the Facility.

Article III f) – External Transportation of Materials

BEST PRACTICE (III)(f) 1 – When the Facility is responsible for moving Customer Materials for Recycling, then the Facility shall have a procedure for identifying a secure method for moving the Customer materials and reporting the shipped material details to the Customer.

BEST PRACTICE (III)(f) 2 – When the Facility is responsible for moving Customer Recycled Materials, then the Facility shall have a procedure for identifying a secure method for moving the Customer materials and reporting the shipped material details to the Customer.

ARTICLE IV – TRAINING

BEST PRACTICE (IV)(a) 1 – The Facility shall prepare training records to document the way that it has met its training requirements.

BEST PRACTICE (IV)(a) 2 – A recycling Facility shall ensure that the recycling personnel have received appropriate training related to the functions they perform, including but not limited to use of equipment and machinery and materials identification techniques.

ARTICLE V – DOCUMENTATION & RECORDS

Article V a) – Material and Transaction Records

BEST PRACTICE (V)(a) 1 – A recycling Facility shall have a procedure for identifying, collecting and reviewing the appropriate records related to the Materials for Recycling.

BEST PRACTICE (V)(a) 2 – A recycling Facility shall have or prepare a receiving document describing each arriving Materials for Recycling, and shall have a procedure for the acquisition and/or preparation of such records.

BEST PRACTICE (V)(a) 3 – A recycling Facility shall have a clear, written understanding of any customer expectations or demands concerning handling of Materials for Recycling that belong to a Customer.

BEST PRACTICE (V)(a) 4 – If a recycling Facility does not own the Materials for recycling, then the Facility shall have a clear, written understanding of how the Recycled Materials are to be dispositioned following recycling.

BEST PRACTICE (V)(a) 5 – A recycling Facility shall have or prepare an output document describing each lot of Recycled Materials, and shall have a procedure for the preparation of such output documents.

BEST PRACTICE (V)(a) 6 – Where the recycling Facility accepts Material for Recycling that belongs to a customer, the Facility shall have a procedure for documenting what reporting requirements, if any, are owed to the Customer with respect to the Material for Recycling or the resultant Recycled Materials.

Article V b) – Reference Manuals

BEST PRACTICE (V)(b) 1 – A recycling Facility shall maintain appropriate reference manuals as aids in identifying materials and their physical properties. The Facility shall maintain appropriate customer specifications as aids in processing materials.

ARTICLE VI – TOOLING

BEST PRACTICE (VI) 1 – The Facility shall ensure that it has and uses the appropriate tooling, equipment and / or machinery for the recycling functions it performs.

BEST PRACTICE (VI) 2 – Tooling, equipment and machinery should be maintained, calibrated and tested according to the manufacturer’s recommendations, so long as those recommendations are appropriate to the usage at the facility. Where there are no manufacturer’s recommendations for maintenance, calibration and testing, or where the manufacturer’s recommendations are inappropriate for the Facility, the Facility should develop its own procedures for maintenance, calibration and testing.

ARTICLE VII – PARTS AND MATERIALS MANAGEMENT DURING PROCESSING

Article VII a) – Receiving Inspection for Materials for Recycling

BEST PRACTICE (VII)(a) 1 – Incoming Materials for Recycling should be checked to ascertain whether they contain unexpected hazards.

BEST PRACTICE (VII)(a) 2 – Incoming Materials for Recycling should be checked to assure they meet the documented identification.

BEST PRACTICE (VII)(a) 3 – After Receiving Inspection, Incoming Materials for Recycling being received should be identified and segregated.

Article VII b) – Segregation during Recycling Stages

BEST PRACTICE (VII)(b) 1 – The recycling facility should have a procedure for segregating materials during the various stages of recycling

Article VII c) – Containerization

BEST PRACTICE (VII)(c) 1 – The Facility shall ensure that it has appropriate storing and shipping containment and packing materials for the articles or materials that it handles.

Article VII d) – Shipping

BEST PRACTICE (VII)(d) 1 – The agreement with the Customer may specify that the Customer is responsible for shipping or transportation issues, in which case the Customer's procedures, and not the Facility's procedures, shall be used.

BEST PRACTICE (VII)(d) 2 – The Facility shall ensure that materials it ships or transports are packaged and shipped appropriately in accordance with acceptable standards, including contractual requirements.

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BEST PRACTICE (VII)(d) 3 – The Facility shall have a procedure for assuring its own compliance with dangerous goods regulations.

BEST PRACTICE (VII)(d) 4 – The Facility shall have a procedure for assuring its own compliance with import and export regulations.

ARTICLE VIII – ENVIRONMENTAL PROTECTION

BEST PRACTICE (VIII) 1 – The area and methodology for recycling should adequately protect the environment from unanticipated releases of fluids and hazardous materials that are used during the processing or that might escape from the Asset during recycling.

BEST PRACTICE (VIII) 2 – If the Asset or the Materials for Recycling contain fluids then the fluids must be drained, managed and disposed of according to local jurisdictional requirements.

BEST PRACTICE (VIII) 3 – The Facility shall take reasonable care to contain Materials for Recycling, and Recycled Materials, from being released to the environment.

ARTICLE IX – ACCOUNTABILITY TO THE CUSTOMER

BEST PRACTICE (IX) 1 – Where verification is required by the Customer, supplier or source, the Facility shall have a procedure for verifying to each Customer or supplier of Materials for Recycling, or each Asset owner or source, that the Facility fully implements each element of the agreement between the Facility and the Customer, supplier or source.

ARTICLE X – SCRAPPING

BEST PRACTICE (X) 1 – When aircraft parts and/or material are specifically identified by the Customer to be precluded from re-entry into the civil aviation marketplace, the facility shall have procedures to address the handling of such parts.

BEST PRACTICE (X) 2 – The parts and/or material shall be precluded from re-entry into the civil aviation marketplace by rendering those parts unusable for their original intent.

BEST PRACTICE (X) 3 – Until such time that the identified parts and/ or material are rendered unusable, the identified parts shall be segregated from other parts.

BEST PRACTICE (X) 4 – The facility shall have a procedure and methods for accountability regarding the records created to list and attest that the identified parts and/or material have been rendered unusable.

ARTICLE XI – KPIs

BEST PRACTICE (XI) 1 – A facility which voluntarily chooses to employ Key Performance Indicators, and to receive AFRA recognition of the same, shall implement one of four levels of KPIs; Bronze, Silver, Gold, or Diamond.

BEST PRACTICE (XI) 2 – All KPIs shall be measured every two years, or more frequently if desired. For the Diamond level, rather than every two years, the KPI data must be attributable to each asset by aircraft MSN or asset serial number.