



Information Article

Disabled Aircraft - REMOVAL / RECOVERY / SALVAGE



Relevance:

Airline, **Airport** and **Ground Handling Staff** etc. - Emergency / Incident Response Planning





Introduction

- ❖ Firstly, we include a link below, at the end of which is an excellent article on the subject of aircraft removal / recovery / salvage

Article taken from 'International Airport Review' - Issue 5 / 2008 - 'Beyond the Piano Keys' - author Malcolm Brown. The latter is a very experienced expert in disabled aircraft recovery ops

<https://www.internationalairportreview.com/article/818/beyond-the-piano-keys/>

- ❖ Once you have read this article return here and, on the next page, see examples of typical airline equipment required to conduct effective and efficient aircraft removal / recovery / salvage operations
- ❖ On page **9** you will find a summary of what the '*International Airlines Technical Pool* (IATP)' is all about + follow links therein for additional information
- ❖ Starting on page **10** you will find a generic '*Disabled Aircraft Removal / Recovery Plan*' for a fictitious but representative **airport** (XYZ International Airport - XIA)





Crashed or Disabled Aircraft - Removal / Recovery / Salvage

Equipment Available from / via **ABCX Airways** (airline) Engineering Department





ABCX AIRWAYS - AIRCRAFT RECOVERY KIT LIST - SEP 20xx (All locations at [fictitious] 'XYZ' International Airport)

JACKING EQUIPMENT							
ITEM	PART NUMBER	DESCRIPTION	S/N	QTY	SWL	LOCATION	REMARKS
01		Low Profile Jack (Main)		02	100ton	Hangar x	4 metre extension height
02		Low Profile Jack(Nose)		01	50 ton	Hangar x	4 metre extension height
03		Jack Hydraulic Control Unit		03		Hangar x	
04		Pallet jack		01	55ton	Hangar x	
05		Cantilever Jack (Rhino)		01	90ton	Hangar x	
06		Cantilever Jack (Rhino)		01	85ton	Hangar x	
07		Cantilever Jack (Rhino)		01	85ton	Hangar x	
08		Cantilever Jack (Rhino)		01	55ton	Hangar x	





<i>PNUEMATIC LIFTING EQUIPMENT</i>							
09		Air Bag	30 ton	90		Hangar x	Awaiting 3 replacements
10		Air Bag	40 ton	30		Hangar x	
11		Compressor / Cont Consol		01		Hangar x	
12		Distribution Boxes		05		Hangar x	Stored on Control Console
13		Single Control Console		02		Hangar x	
14		Remote PX REG Inflator		01		Hangar x	Local manufacture
15		Distribution Manifold (Pig)		08		Hangar x	
16		Connecting Hose	long size	20	200PSI	Hangar x	
17		Connecting Hose	long size	22		Hangar x	Console to Distribution Box
18		Grey Hose	small size	97		Hangar x	
19		Blue Hose	small size	08		Hangar x	Manifold to Base Bag
20		Foam Ground Sheet	Thin	70		Hangar x	Old Type
21		Foam Ground Sheet	Thick	30		Hangar x	New Type



LIFTING & PULLING EQUIPMENT							
22		Towing Strap		01	6 ton	Hangar y	
23		Towing Strap		01	6 ton	Hangar y	
24		Lifting / Pulling Sling		01	35 ton	Hangar y	Fibre (sand filled-Orange)
25		Lifting / Pulling Sling		01	35 ton	Hangar y	Fibre (sand filled-Blue)
26		Beam Assembly		01	10ton	Hangar y	
27		Beam Assembly		01	10ton	Hangar y	
28		Wire Rope with shackle		05	2ton	Hangar y	
29		Shackle		04	40ton	Hangar y	For Load Cells
30		Shackle		01	17 ton	Hangar y	
31		Shackle		03	9 ton	Hangar y	





LIFTING & PULLING EQUIPMENT - cont'd							
32		Shackle		04	7 ton	Hangar y	
33		Shackle		17	6 ton	Hangar y	
34		Shackle		02	4 ton	Hangar y	
35		Lift Cable		02	2ton	Hangar y	
36		Lift cable		12	6ton	Hangar y	
37		Load Cells		02	80ton	Hangar y	Remote reading
38		Fuselage Lifting Beam		01	46ton	Hangar y	Multi Aircraft inc A380
39		Fuselage Lifting Straps	8 Band	01		Hangar y	A380 only (25in pitch)
40		Fuselage Lifting Straps	6 Band	01		Hangar y	Multi Aircraft (20in pitch)
41		Sling Lift/Pull	25592	01	35ton	Hangar y	Blue Fibre (Flat)
42		Sling Lift/Pull	25591	01	35ton	Hangar y	Blue Fibre (Flat)
43		Aluminium Roadway	Large	14		Hangar y	
44		Aluminium Roadway	Small	15		Hangar y	
45		Plastic Roadway		50	65 ton	Hangar y	ALTURA Mat (with cleats)
46		Beam Bar (01SET=02PC)		6St		Hangar y	





TETHERING EQUIPMENT							
47		Cable		06	3ton	Hangar y	
48		Winch Assembly		06	3.2ton	Hangar y	

MISCELLANEOUS EQUIPMENT							
49		Aircraft Turntable		01	18ton	Hangar z	
50		Tent (Inflatable Shelter)		01		Hangar z	
51		Tent Support Hooks		15		Hangar z	
52		Tent Support Rods		02		Hangar z	
53		Tent Air Blower		08		Hangar z	
54		Hammer		01	1.5lb	Hangar z	
55		Chain Winch		03		Hangar z	
56		Bottle Jacks		02		Hangar z	
57		Crow Bar		01		Hangar z	





INTERNATIONAL AIRLINES TECHNICAL POOL

The **International Airlines Technical Pool** (IATP - <http://www.iatp.com/>) is a convention of airlines *sharing technical resources* to generate economic savings and support on time, dispatch, reliability and operational safety

IATP is made up (2024) of over 100 airline members + 40 'guest' airlines and 35 service providers (associate members). In the spirit of co-operation, members of the aviation industry gather twice yearly to discuss sharing of resources, reducing costs, whilst improving operating efficiency

Under IATP auspices, members share *aircraft recovery kits, aircraft parts / tooling, line maintenance services* and *ground handling equipment*

The membership has grown to 400 delegates from around the world, making it a diverse and multi-cultural community. There are no boundaries and every member is encouraged to bring forward their ideas, suggestions and opinions without any political prejudice. In the spirit of a "global village" environment, IATP promotes goodwill towards all its members, explores new directions within the frame of its mission and respects the interest of all member airlines.

Within its 75-year history promoting unparalleled safety in the skies, IATP has not only contributed immensely to the aviation industry as we know it today, but has also forged strong bonds between airlines around the world. Competing airlines are united in the technical field. This bond, which began in 1948, was originally based solely on a gentlemen's agreement

With the dawn of the 21st century propelling IATP forward, its mission to provide excellent technical performance in aircraft operations is unmatched due to the high degree of mutual assistance from all member airlines

IATP governance is assured by an Advisory Committee while the day-to-day activities are managed by a Corporate Office. Several Project Groups and Committees have been set up in order to address current industry challenges and maintain the IATP to the highest levels of expertise





Extract from a real (*de-identified*) **AIRPORT** operator's instructions for Aircraft Recovery / Removal

XYZ International Airport (XIA)

AI 42 / 13 - dated 01 Oct 23 - Aircraft Recovery / Salvage Procedures

This instruction replaces xxxx / yy - which should now be destroyed

INTRODUCTION

It is a 'Condition of Use' of XYZ International Airport (**XIA**) that 'airport instructions - (AI)' issued by the Airport Operator (XYZ Airports Company) are complied with by all airport users. Furthermore, it is a requirement of the current **XIA** Airport Emergency Plan (AEP), that every airline / aircraft operator using the airport ***must have local crisis response plans and resources in place - compatible with the AEP, regarding appropriate PRE-arrangements being put in place - plus establishment of firm contracts (as required) - for the removal of disabled aircraft / aircraft wreckage***

This Instruction sets out the Aircraft Recovery procedures and forms part of said XIA AEP which, in turn, is part of the **XIA** Aerodrome Master Manual - thus ensuring that Aircraft Recovery Procedures form part of the aerodrome licensing / certification process (a regulatory requirement)

This Instruction and the processes / procedures it describes, also ensures that **XIA** (airport operator) complies with the recommended practices concerning same found in *ICAO Annex 14 - 'Aerodromes'* together with *Airport Services Manual (ASM) - Part 5 - 'Aircraft Recovery'* (as updated / relevant)

GENERAL

The primary aim of an aircraft recovery / salvage plan is to ensure that, in the event of an incident or accident, the aircraft and / or wreckage does not constitute a danger or obstruction to the public, to air navigation or to the environment - and that normal airport facilities are restored as soon as possible. The need to avoid causing further damage to the aircraft, airport property or environment etc. must be observed as far as is possible and practicable

In the case of a "reportable accident" within the meaning of the Civil Aviation (Investigation of Air Accidents and Incidents) Regulations 20xx, the aircraft or wreckage must not be moved or interfered with until permission has been given by **XIA** (Airport Operator) - and even then, only after consultation with the Air Accident Investigation Authority in charge. (The duty ATC 'Watch Manager' is responsible for notifying reportable accidents to the Air Accident Investigation Authority)

The recovery of a disabled aircraft / wreckage shall not be undertaken until the Aircraft Accident or Aircraft Ground Incident, as defined in the XIA AEP, has been terminated. Furthermore, the relevant 'Air Accident Investigation Authority' must release the aircraft and the airline and / or its Insurers give permission for recovery / removal. The XIA Airport Police / local Police will also need to release the site from 'scene of crime' requirements (if applicable)

XYZ Airports Company will be the overall co-ordinating body throughout any such operations





RESPONSIBILITIES OF AIRLINE / AIRCRAFT OPERATORS

The airline / aircraft operator (and / or its designated aircraft recovery agent) is responsible for removing the aircraft / wreckage as quickly as possible (after all appropriate permissions have been obtained as per further above) - taking all practicable and reasonable steps to minimise health, safety and environmental impacts - which might have resulted from the incident

The airline / aircraft operator etc. is responsible for the provision of the necessary technical advice (including that of the 'insurer' as required), supervision and any necessary equipment, materials, manpower etc.

Airline / aircraft operator users of the airport must have adequate resources to conduct their **own** recovery operations **OR**, if they do not have same, must have **pre**-prepared contract arrangements in place with another airline and / or specialist aircraft recovery agent - being capable of expeditiously undertaking and completing the aircraft recovery / salvage task, including the remediation of any associated health, safety and environmental impacts (e.g. containment and removal of aircraft fuel, chemical and oil spillages)

If information or assistance is required concerning such contracts (see previous para) then contact should be made with the **XIA** Airport Manager on **xxxxxxx** (telephone number)

The airline / aircraft operator and / or designated aircraft recovery agent is responsible for making any arrangements with local Customs and Immigration re removal of baggage, cargo, mail etc.

The airline / aircraft operator etc. is required to defray any charges for work involved in making good damage to **XIA** property and / or infrastructure - and to meet the cost of their (**XIA's**) recovery operation, including any charges related to use of any **XIA** equipment, personnel etc.

If the airline / aircraft operator etc. refuses to remove a damaged aircraft / wreckage **or** fails / neglects so to do:

- within a reasonable time **AND / OR**
- when the aircraft / wreckage is creating an obstruction **AND / OR**
- where the impact caused by the incident has resulted or will result in a breach of health & safety and / or environmental regulations **AND / OR**
- where any embarrassment or nuisance to **XIA** arises in fulfilment of its responsibilities as an 'Aerodrome Licensee':

Then **XIA** may undertake independent action to remove the aircraft / wreckage. **XIA**, its servants and agents etc. will not accept responsibility for any loss or damage of any kind resulting from this latter action. The airline / aircraft operator etc. shall indemnify **XIA**, its servants and agents etc. accordingly and shall also be responsible for all costs incurred





RESPONSIBILITIES OF XYZ AIRPORTS COMPANY (Airport Operator)

The Airport Operator's person designated with responsibility for overseeing aircraft recovery / salvage operations at XIA (the '**designated manager**') will request all interested parties and / or their reps to confer, at a location near to the incident site, as soon as is practicable. This group is expected to offer advice, assistance etc. on the formulation / implementation etc. of an appropriate recovery / salvage plan

Said group will typically comprise (In no particular order. List is not exhaustive):

- The Incident Airline / Aircraft Operator (and / or its designated agent(s) / rep(s))
- Any assisting Airline / Aircraft Operator etc. (e.g. a local airline with the experience, facilities etc. to effectively and efficiently conduct aircraft removal / salvage operations at XIA)
- The Air Accident Investigating Authority
- Airport Operator Engineering and other appropriate representation
- Associated Rescue and Fire-fighting Service(s) - RFS
- ATC
- Airport and local government Health & Safety representation
- Local Police and Airport Security
- Local Environment Agency
- Local water and sewage / run-off Utility Provider(s)
- Aircraft manufacturer's representative
- Into-plane refuelling operator
- Insurers (technical experts / other appropriate reps)

The '**designated manager**' (acting as overall co-ordinator for the operation) shall:

- Define the area in use for recovery operations and arrange for its safeguarding (e.g. by Police; Airport Security etc.), promulgation of entry / exit procedures etc.
- Specify the arrangements for personnel and equipment to proceed to and from the area
- Promulgate any limitations to the operation

The Airport Operator shall, on a repayment basis and at the request of and under the supervision of the Airline / Aircraft operator (or designated recovery agent) - provide assistance with such of its recovery equipment (if any) and / or manpower - as appropriate

Whilst such assistance (if any) will be conducted with due care and attention - XYZ Airports Company (plus its servants, agents etc.), will not be liable for any loss or damage resulting from the use of its equipment, materials or personnel during said recovery operation (nor for their non-availability) - for whatever reason

A formal (legal) hire agreement and general indemnity must be entered into by the associated airline / aircraft operator (and / or designated aircraft recovery agent) before XYZ Airports Company recovery personnel and / or equipment can be brought into operation. Such recovery equipment must be returned in the same order and condition as it was in, prior to the hiring of same





RECOVERY - FIRST ACTIONS

Once the initial (fire & rescue) response to the emergency has been completed and the emergency terminated, the RFS officer in charge will hand over control to the 'designated manager'. The former shall advise the latter of all known damage to the aircraft and whether it was caused through the accident itself and / or through rescue etc. ops

In the case of a reportable accident, the aircraft / wreckage must not be moved or interfered with until the designated Air Accident Investigation Authority (AAIA) has been consulted. Additionally, bodies or body parts should typically **not** be moved and / or removed (there are exceptions - see next two paras) without clearance from the AAIA, the Police and the Medical Examiner / Coroner

An air accident investigation process is **unlikely** to preclude **preparatory** work for the removal of 'the' accident aircraft / wreckage - and / or any detached parts - and / or of preparation of an associated 'plan of action'. However, such plan may be affected by AAIA requirements to preserve particular items intact for examination, after they have been removed from site. Other items may need to be left in situ and / or their position marked prior to removal. Accordingly, no items must be moved on the site - or removed from the site - without AAIA authority, unless critical preservation of life and / or evidence so dictates

Removal of wreckage (assuming **RFS** ops have been completed and the emergency terminated) prior to the AAIA investigation may be required in order to alleviate any immediate danger or obstruction to the public, air navigation etc. As such, it will typically only be removed on the authority of the **designated manager** - who shall notify the AAIA of any such decision as soon as possible. He / she shall also ensure that every effort is made to mark and photograph the position of relevant items etc. before removal, including bodies and body parts, as appropriate

The 'designated manager' shall record (log) all such actions taken and arrange for the following:-

- Attendance of photographers to make a video record + take photographs of the aircraft and wreckage
- The cordoning off of the site to prevent unauthorised access
- Access to the site for authorised personnel, ensuring personal health and safety is taken into account
- The promulgation of changes to facilities, services etc. caused by the accident and / or the recovery operation

The XYZ Airports Company has limited aircraft recovery equipment and, dependant on the size of the involved aircraft - will be able to provide:

- TBA (details of equipment supplied by Airport Operator)
- TBA (details of equipment supplied by Airport Operator)
- TBA (details of equipment supplied by Airport Operator)
- etc.





THE RECOVERY OPERATION

The 'designated manager' shall convene the initial (and any further) meeting(s) outlined above - and agree a broad plan of action with relevant attendees. The following factors should be considered:

- ✓ Risk assessment
- ✓ Aircraft / wreckage electrically safe e.g. engines and APU shut down; aircraft batteries removed or earthed: electrical services in the area isolated etc.
- ✓ Aircraft oxygen system isolated
- ✓ Residue of liquid fuel is neutralised / removed to prevent contamination and / or ignition when recovery commences
- ✓ Presence of microscopic, carbon-fibre particles
- ✓ Other Health and Safety factors (including use of 'personal protective equipment')
- ✓ How recovery ops should be conducted considering any aircraft damage
- ✓ How recovery ops should be conducted considering potential damage to property
- ✓ How recovery ops should be conducted considering potential environmental damage
- ✓ Can the aircraft be towed on its own landing gear?
- ✓ The firmness, condition, slope etc. of the site and how it would affect the most practical method of lifting (as required)
- ✓ Types / quantities of lifting equipment required (e.g. inflatable bags, slings, hawsers, jacks)
- ✓ Moving equipment / vehicles required (e.g. cranes, bulldozers, steps, cherry pickers etc)
- ✓ Possibility of temporary load bearing access roads for:
 - Facilitating de-fuelling
 - The movement of baggage, mail and cargo
 - The movement of recovery vehicles
 - The movement of the aircraft onto firm ground
- ✓ Necessary measures to lighten the aircraft, in addition to de-fuelling. (Note - it is important that sufficient surface de-fuelling vehicles are available)
- ✓ Any adverse / unsafe effects on the aircraft's centre of gravity, of further structural damage to the aircraft and / or of any 'lightening' (reducing weight) measures anticipated
- ✓ Possible requirements to reduce the height of the wreckage (e.g. removal of the vertical tail-fin [stabiliser] - in order to remove an obstruction to normal aircraft operations)
- ✓ Provision of structural support to avoid uncontrolled / sudden movement during lifting ops
- ✓ Any other safety precautions to safeguard personnel during all stages of the operation
- ✓ Timing the removal of the aircraft away from the scene so as to minimise disruption of normal aircraft operations
- ✓ Measures required for containing / minimising any health, safety and environmental risks and impacts - including any appropriate notification(s) to Statutory Bodies and Authorities

QUESTIONNAIRE FOR AIRLINES / AIRCRAFT OPERATORS

On the next page will be found a typical 'sample' of the aircraft recovery / salvage questionnaire - which all aircraft operators at XIA must complete *as a pre-condition of their use of the airport*:





AIRCRAFT RECOVERY ARRANGEMENTS - QUESTIONNAIRE FOR AIRCRAFT OPERATORS AT XIA

- ✓ Name, local address and reliable 24H contact details of senior Airline / Aircraft Operator person (and / or Rep) at (or closest to) **XIA**

- ✓ Who precisely (name, title and full contact information) is operationally responsible for recovery / salvage of one of your company aircraft, in the event of an incident at or in the vicinity of **XIA**?

- ✓ Are you able (i.e. by using your own resources) to adequately undertake aircraft recovery / salvage of one of your aircraft at or near to **XIA**?

State 'YES or NO'

If 'YES' - provide details of any company owned / leased equipment readily and quickly available at **XIA** - which can be used to assist in an aircraft recovery situation - and also confirm that you have appropriate, qualified operating staff so to do. (Include e.g. de-fuelling capability, provision of jacks, airbags, wheel-change kits, undercarriage change kit, track-way, steel towing cables, cranes and spreaders, belly-bands / webs for lifting, portable lighting with generators, heavy-duty tugs etc.)

- ✓ If the answer to the last question above is 'NO' - do you have a valid and adequate contract (memorandum of understanding - MOU etc.) - with an appropriate, specialist party - for aircraft recovery / salvage of one of your aircraft at or near to **XIA**

State 'YES or NO'

If 'YES' - what is the effective date and duration (term) of the contract or MOU

If 'YES' - provide name and full contact details of 'appropriate party' providing the recovery / salvage service

If 'NO' - do you have any other appropriate arrangements in place? If so, state them here:





- ✓ Which person(s) and / or title designations (e.g. Duty Operations Controller; MAINTROL etc.) from your company HQ (and contacts also local to XIA) are to be contacted (in order of precedence) if one of your aircraft is disabled at XIA? (Please provide reliable 24H contact details for at least three different persons / designations)

- ✓ Which company representative(s) (name, title & full contact information) is / are empowered to sign indemnity forms & similar - as related to aircraft recovery operations

- ✓ *Insert any other questions here*

Form Completed by:

Name (please print):

Position in Company:

Date:

Signature:

Please return the completed form to:

TBA by XYZ Airports Company

