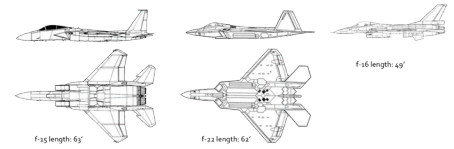
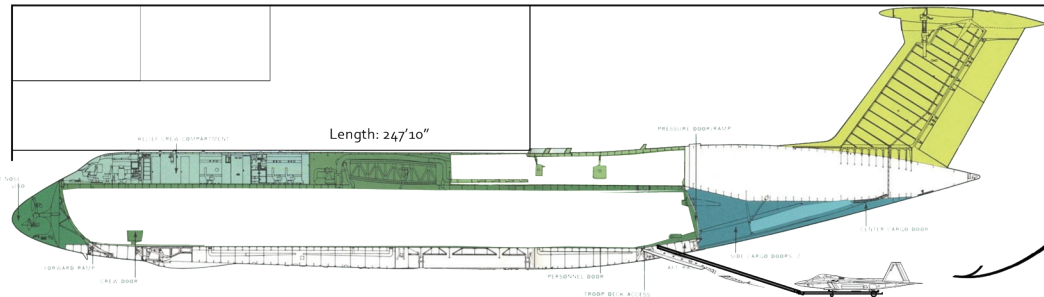


Inflight Refuel and Rearm System

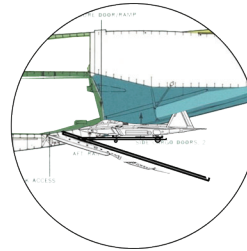
Design for U.S. Air Force



Controlled Capture brings aircraft to an extended work area



Best Use - C-5 Flying Supply Depot

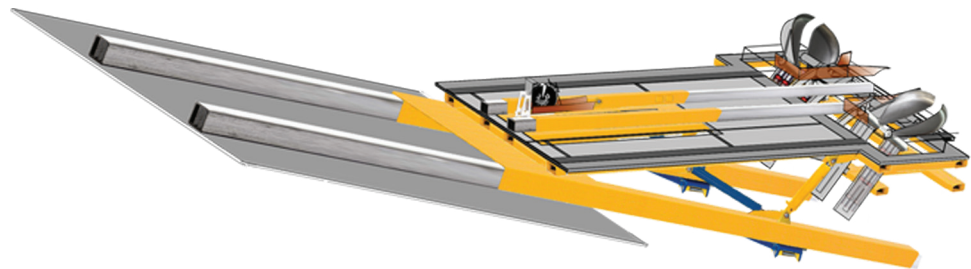


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Robert Cole - 415-251-2180
www.mars-corp.com

This system allows non-stop
Refueling, Rearming and **Pilot rotation**
for extensive force enhancement.

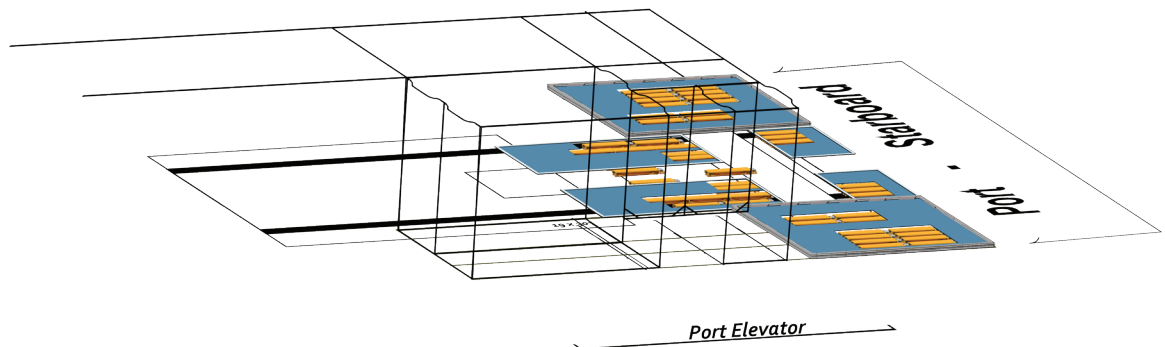
Universal Deck Services All Aircraft

How it's Done:

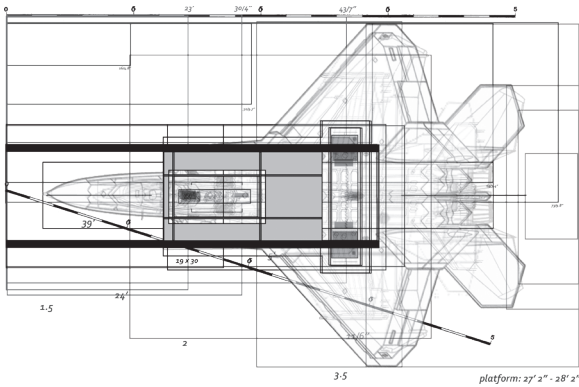


Capture and Release

Elevator and Deck Assembly

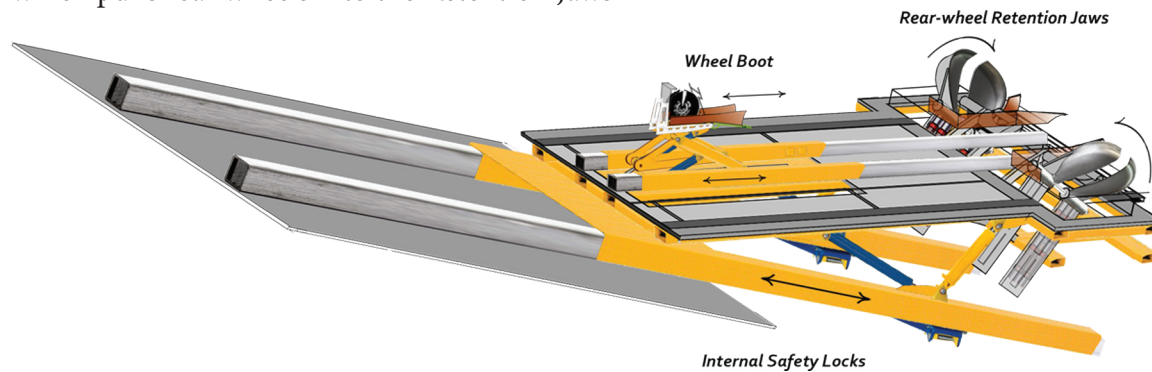


Universal Jacks Deck - Services All Aircraft

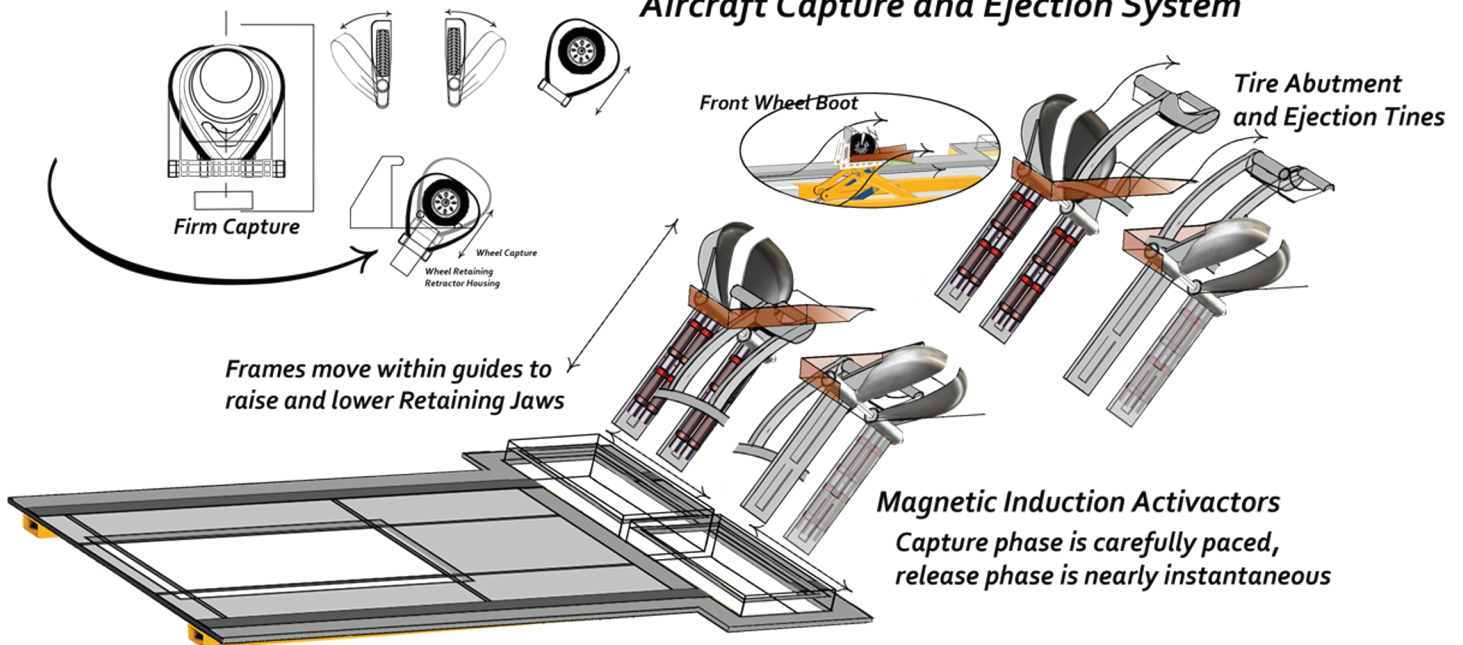


Inflight Aircraft Capture

Computer parameters and Auto-pilot bring Wheel-Boot to capture front strut and tire, which pulls rear wheels into the Retention Jaws

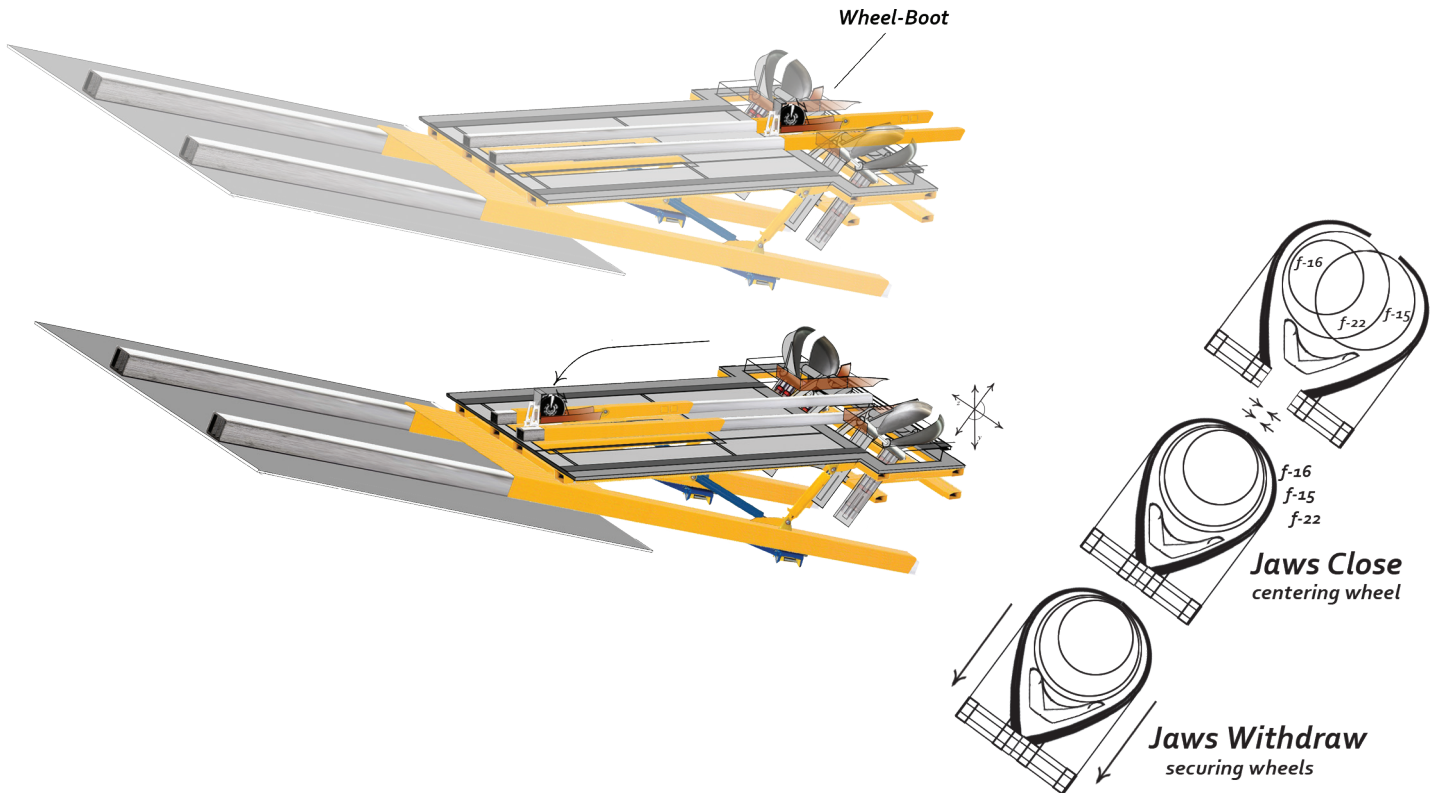


Aircraft Capture and Ejection System

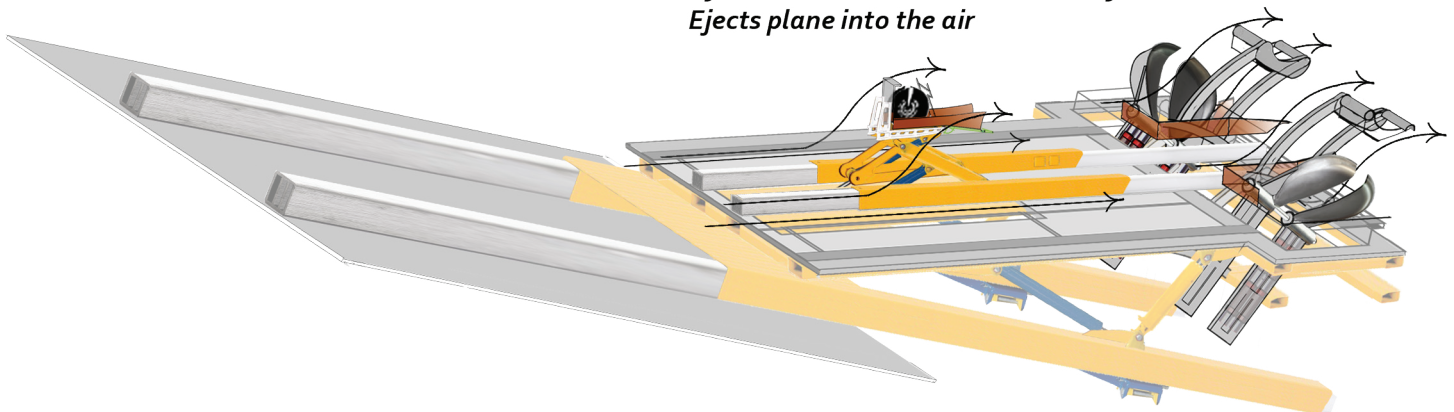


Inflight Aircraft Capture

Boot draws Aft and “Captures” the aircraft front tire and Strut; immediately drawing the plane into rear-wheel capture. **Note:** It may be necessary to add gimbals to the Wheel-Boot, however the Retention Jaws rise and fall in their own elevator chassis and will account all states of turbulence.



Synchronous Wheel Release System Ejects plane into the air

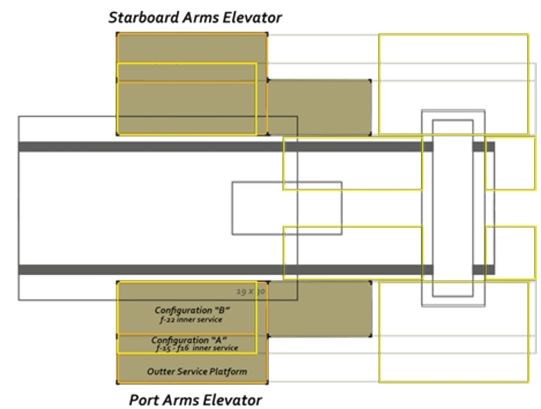
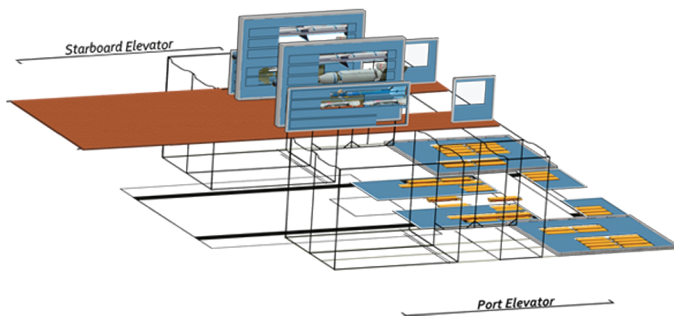


Importantly, the nature of the present design, without wind foils and housing, allows turbulence reducing, free passage of the air-stream.

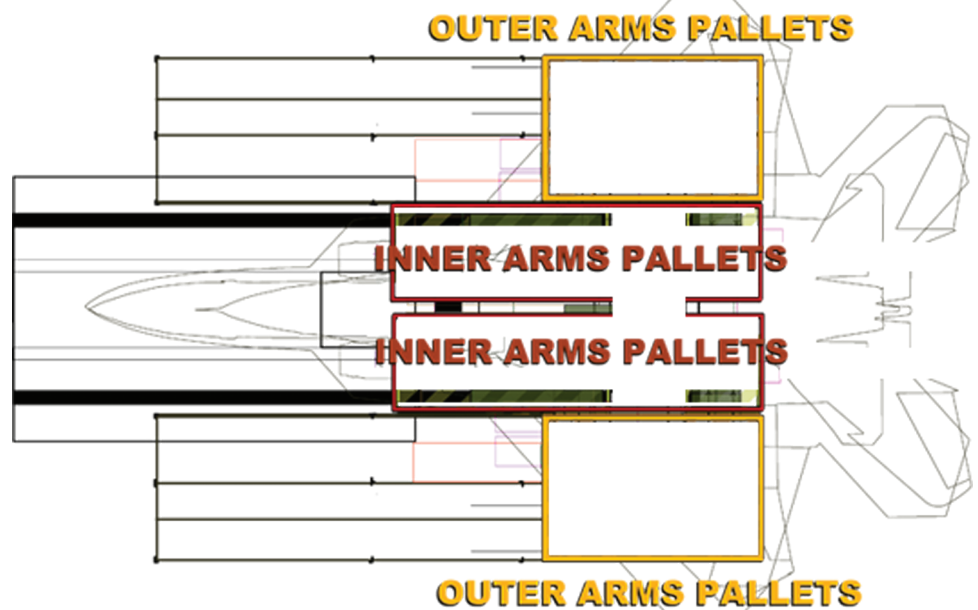
Rearming and Refueling Deck - All Aircraft

Arms Orders queue on Pallets

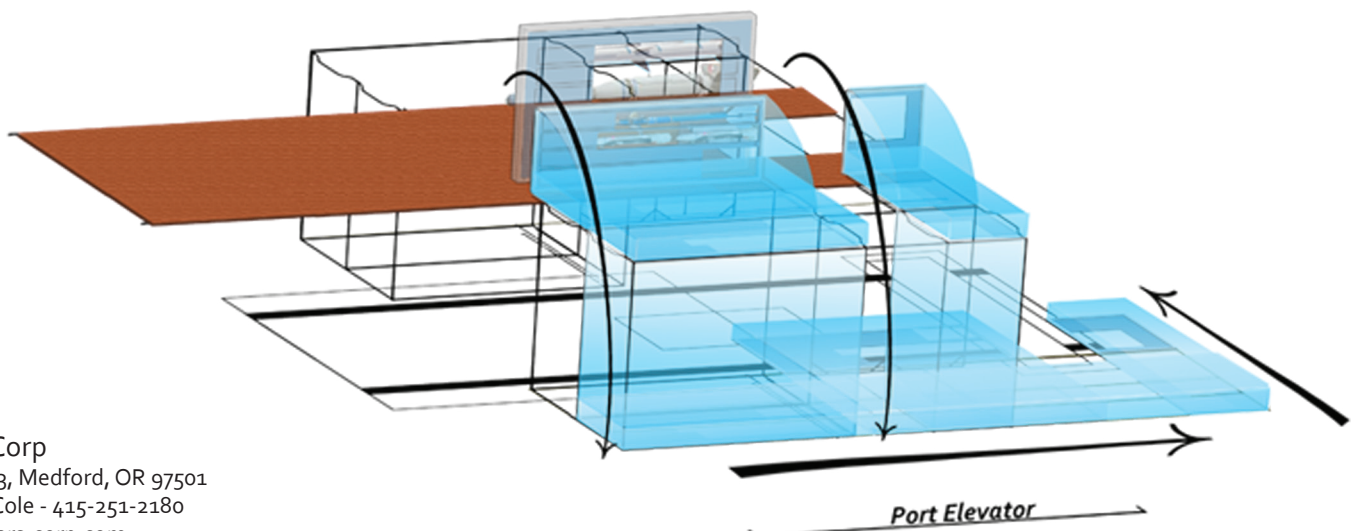
4 of 11



These Decks can be adapted as universal rearm stations on-Base.



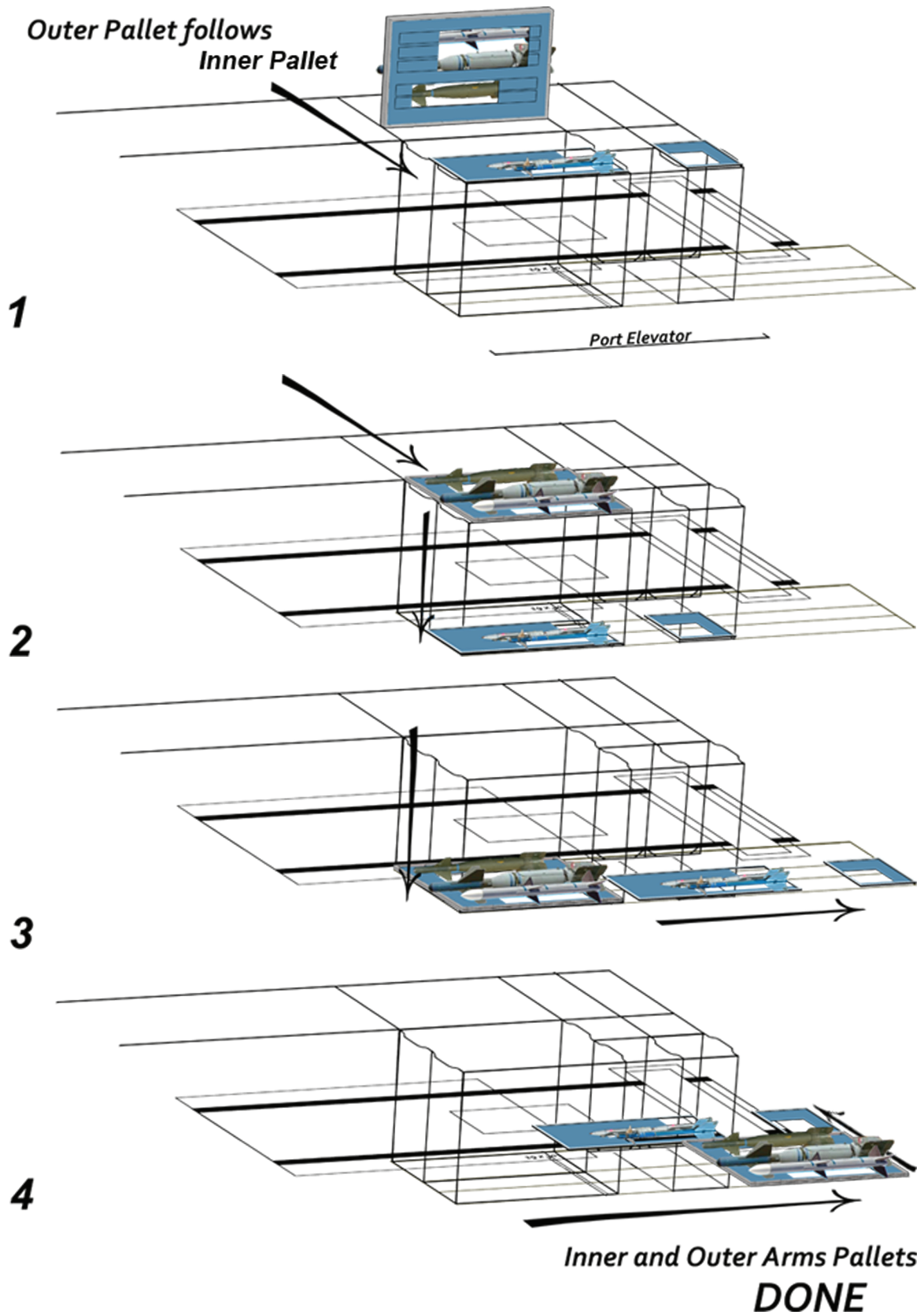
**Port-side
Elevator Path**



Arms Elevator Path

5 of 11

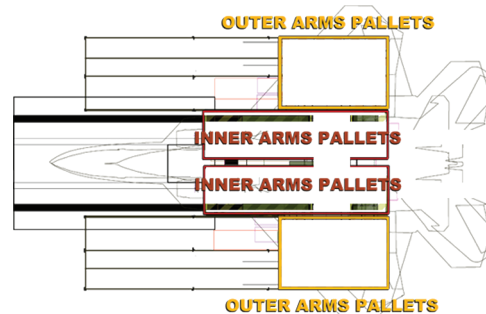
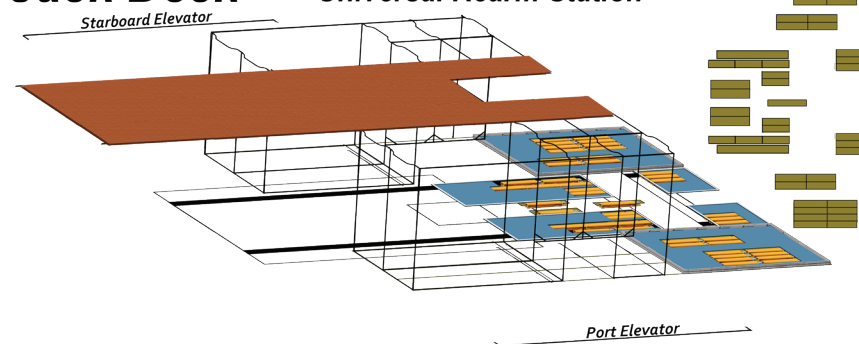
Inner and Outer Arms Pallets
follow down onto the Jacks Deck



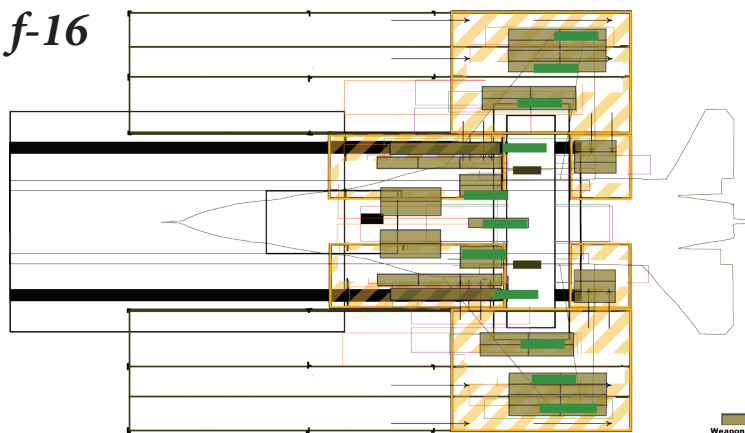
Jack Deck

Universal Rearm Station

6 of 11



f-16

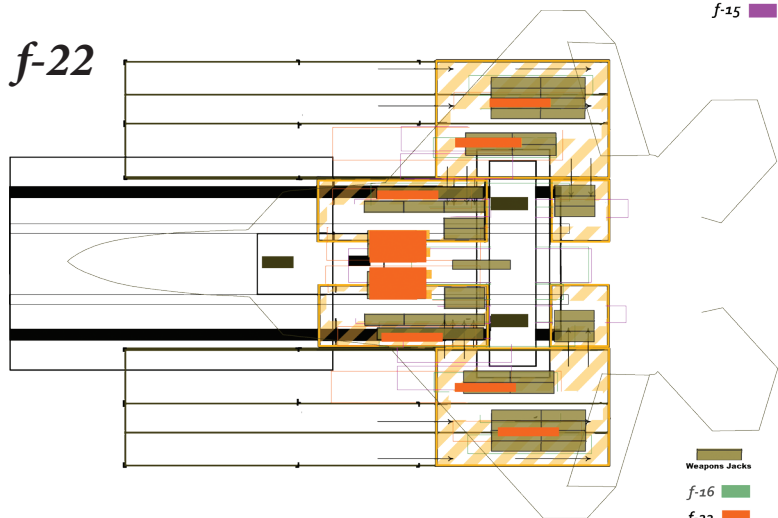


*Pallets Position Arms over Jacks
System Services All Aircraft*

Weapons Jacks

f-16
f-22
f-15

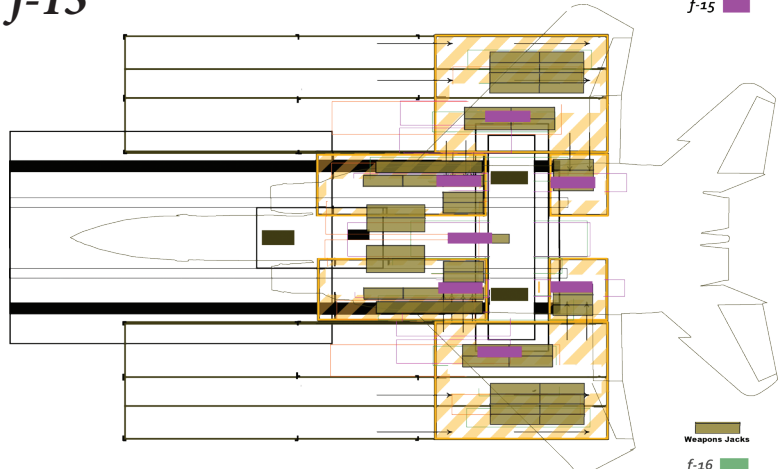
f-22



Weapons Jacks

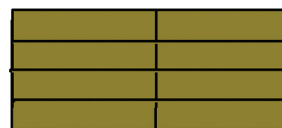
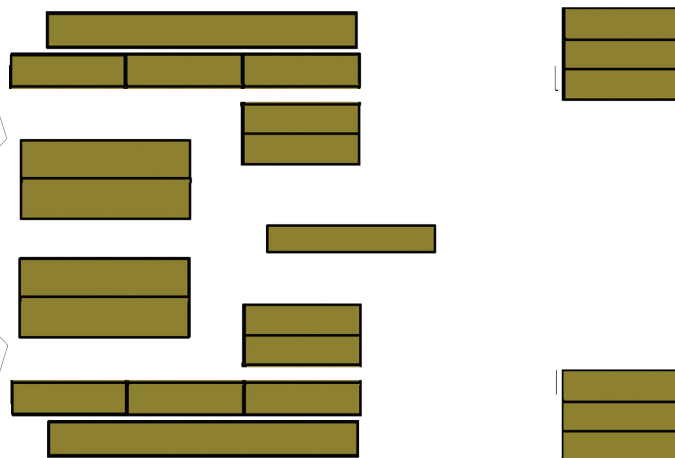
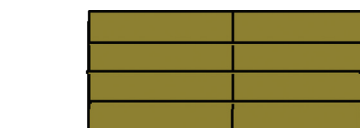
f-16
f-22
f-15

f-15



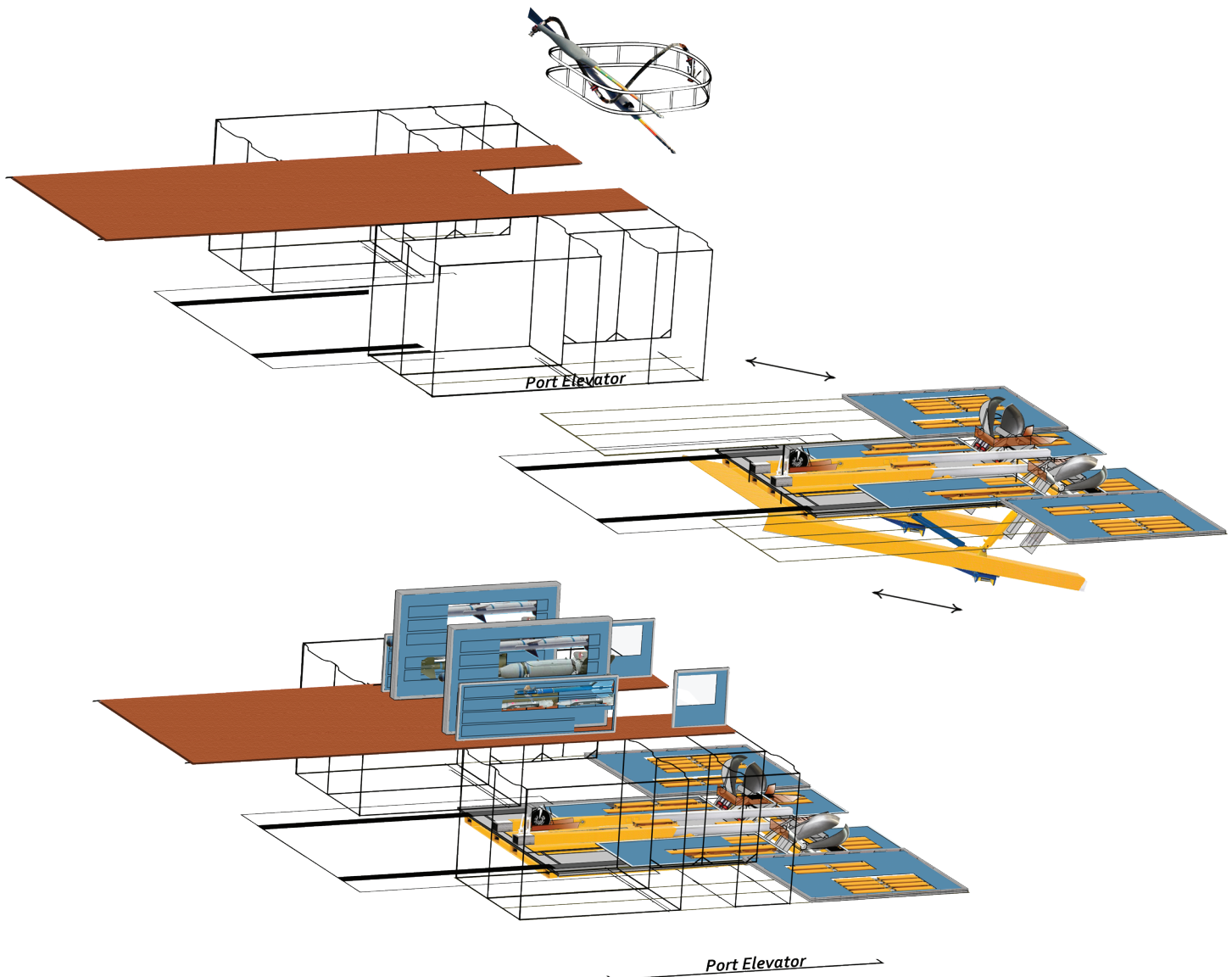
Weapons Jacks

f-16
f-22
f-15



This system allows non-stop **Refueling**, **Rearming** and **Pilot rotation** for reliable and extensive force enhancement for future air warfare.

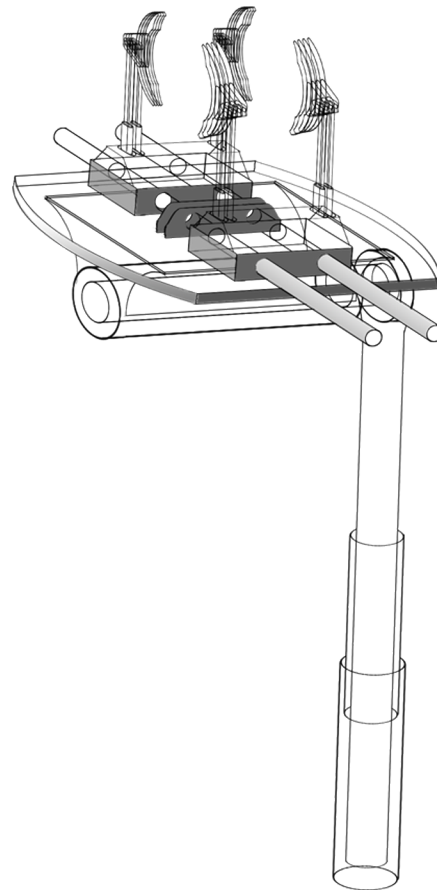
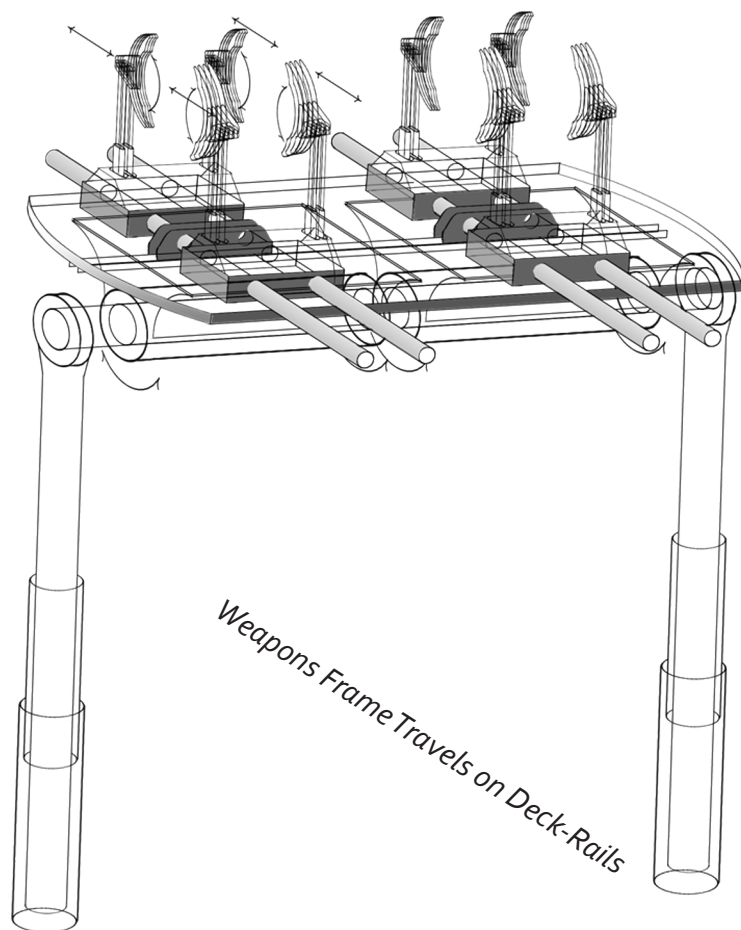
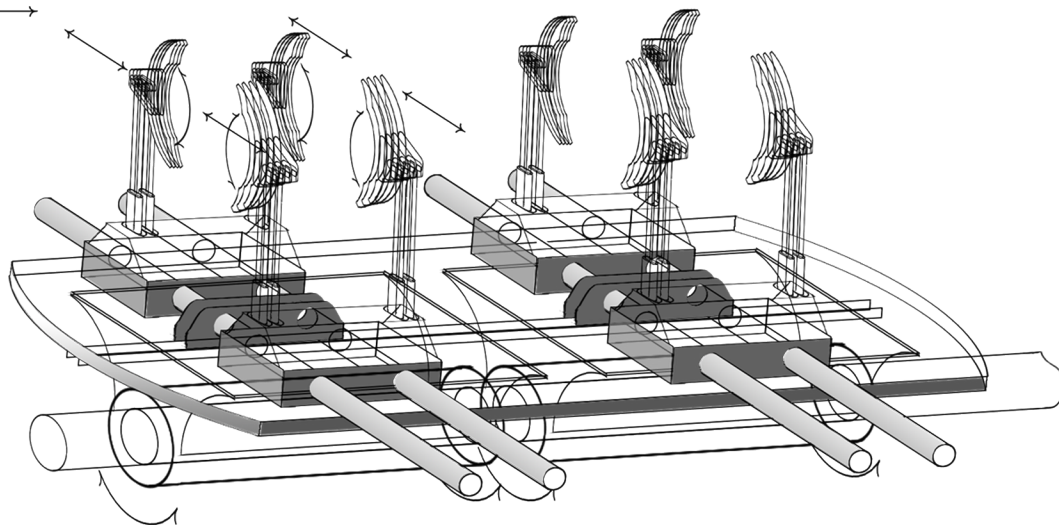
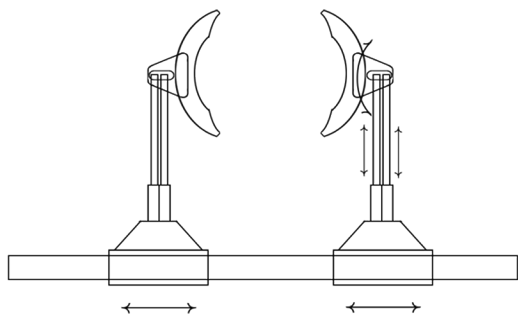
Elevator and Fuels Gondola reside in Cargo Hatch-way over the Aircraft Service Ramp



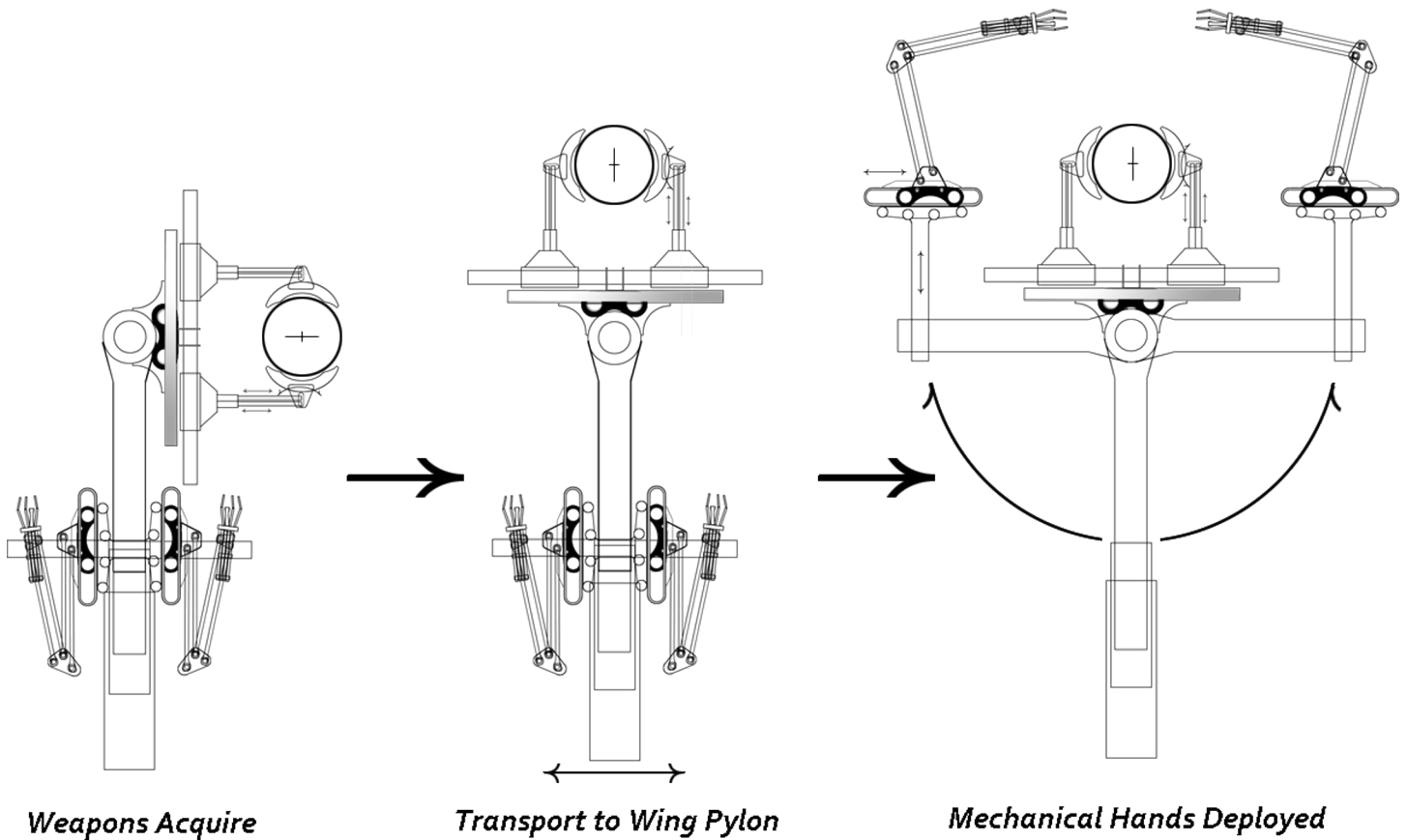
Ramp-Lift brings securely captured plane to the Arms Elevator and Fuels Gondola

Robotic Rearming Deck

Robotic Weapons Rearming Actuator and Transport Frame

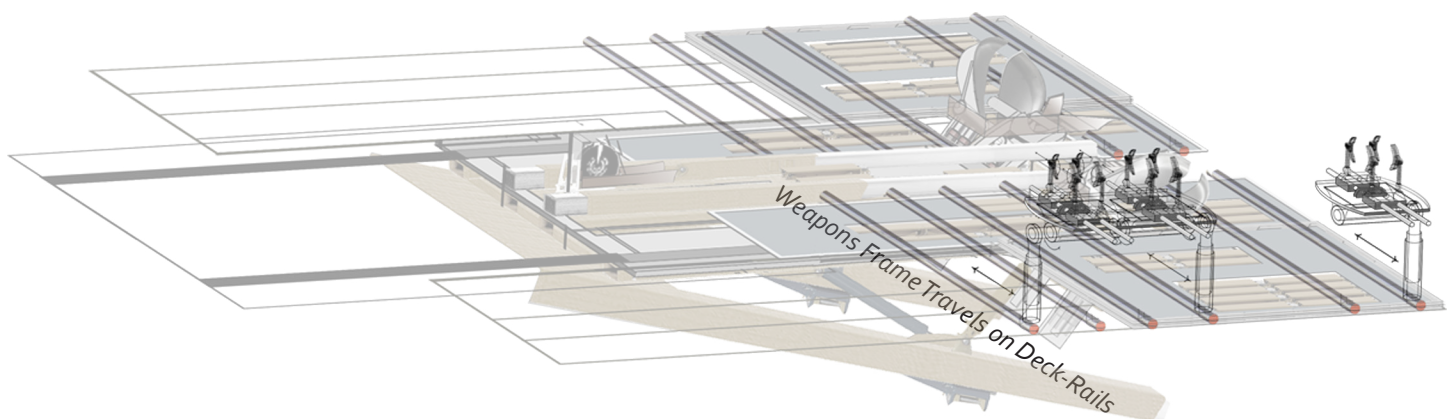


Collapsible Manipulator Hands Complete Rearming Sequence



Three Forward Mechanical Hands per side, Two per side on Aft lift

Transport Frames Travel on Deck Rails to Position Weapons under Pylons



Inflight Refuel and Rearm is Controlled Capture from a Universal Services and Jacks Deck System installed on C-5 Resupply aircraft.

Allowing non-stop, in-theater **refuel**, **rearm**, **full service** and **pilot rotation**, this system opens a new dimension to warfare by imposing a sustainable presence to all future theater operations.

The System consists of a capture and re-arming deck, with arms elevators, and fueling Gondola that unfolds and assembles inflight from Cargo Bay stowage.

The Air Force Research Lab's Request for Proposal, the Explore Opportunity Call, has essentially been fulfilled as we have created the main aspects in clear images and may be viewed on either web document or PDF document with the following internet links:

<http://www.mars-corp.com/inflight1.html>

(or PDF)

<http://www.mars-corp.com/inflight-rearm.pdf>

This system addresses two of the Five Strategic Capabilities, "Complexity, unpredictably and Mass" by streamlining air support and battle operations, and multiplying all four, "Speed, Reach, disruption, lethality" in delivering constant pressure to remote actions.

Importantly, this system is portable and the Rearming and Services Deck can become a standard, one stop refueling and rearming station, both inflight and on ground installations.

There are two main aspects:

Capturing the plane

Link, "Aircraft Capture" on dedicated site: <http://www.mars-corp.com/inflight1.html>

or pages 2 and 3 of the PDF: <http://www.mars-corp.com/inflight-rearm.pdf>

Rearming and Refueling

Link "Inflight Rearm" and "Universal Jack Deck" - <http://www.mars-corp.com/inflight1.html>

or pages 4 to 7 of the PDF: <http://www.mars-corp.com/inflight-rearm.pdf>

Important Notes:

-System shall be computer coordinated with pre-arranged rearm and refuel packages, ordered in-theater via electronic monitoring, for each plane-type.

-The extension deck and elevator lift-rails shall stow away against the interior fuselage when not in use.

-The system shall be designed to future robotic arming expansions. This means developing a **Robotics Rearm Deck** that would take the place of a Jacks Deck as the choice for an evolving world Air Warfare Future.

-The C-5 could be made capable of inflight stores resupply.

Important: Refuel and Rearm and Resupply evokes the notion that an in-theater **dedicated air space be developed and protected**, not differently than that from an aircraft carrier. These Inflight resupply air corridors might then be seen as an Air Force analogue (albeit, less expensive) to the Navy's Carrier force.

The next step in process toward Inflight Refueling and Rearming is not Prototypes, it is PREPARATION for the Prototyping process. Essentially, real designs for prototypes must be created. In order to do this, the following:

- 1): Plan trips to the appropriate Air Force Base and absorb info on the C-5 Cargo Plane, including the cargo bay substructure, and all planes that are projected as possible candidates for the Refuel/Rearm Project. This includes visiting and interviews with pilots and maintenance personnel who work on each plane and seeing the complete maintenance and rearm process for each plane.
- 2): It will be necessary to receive complete documentation on each aircraft, including notes and layout for the avionics and electronics, and its auto-pilot functions. These will need to be considered for designing electronic capturing protocols and which will also be necessary for the eventual flight simulator programs. Therefore it will also be necessary to receive these informations and permissions from provider and industry contractor contacts.
- 3): Prototypes can then be designed and a normal process can be undertaken toward final designs for industry contract awards.

As mentioned in the description, a **Robotic Rearm Deck** needs to be addressed, as should the capacity of inflight stores resupply.

Again: Refuel and Rearm and Resupply evokes the notion that an in-theater **dedicated air space be developed and protected**, not differently than that from an aircraft carrier. These Inflight resupply air corridors might then be seen as an Air Force analogue to the Navy's Carrier force.

Needed areas of attention, plus costs rundown for this proposal:

- Design and specify details of Lift-ramp hinge.
- Design and specify details of elevator latches and mechanism.
- Design and specify details of pallets, rollers and locks.
- Design and specify details of refueling gondola.
- Design and specify details of personnel procedures and maintenance requirements.
- Design and specify details of loading, assembly, transportation, storage.
- Supply block schematics for avionics and coordinate with vendors.
- Supply Schematic for Robotics Rearm Deck as a system option.

All this, we propose. Designs for Prototypes: \$220,000.

Robert Cole, Mars-Corp, Box 4073, Medford, OR 97501 - 415-251-2180