

PRODUCTION CONTROLLERS CRADLE HYDRAULICS PARTS

Until recently, flat transport carts were used at Naval Aviation Depot (NADEP) Jacksonville, Florida to move bulky, difficult to maneuver, aircraft components between receiving and staging areas and the Hydraulics and Constant Speed Drive (CSD) shops. The ergonomics team at NADEP identified the transport cart as an ergonomic hazard for shop workers and production controllers.



Ergonomically hazardous flat transport carts

Ergonomics is the science of fitting equipment and tools to the worker, instead of requiring the worker to adapt to the work environment.

When tasks and workstations are not designed for ergonomic comfort, workers may be at risk for potentially disabling injuries. In addition, work tasks that involve excessively repeating the same motions may overwork the muscle groups that are used to do that work. A person who uses repetitive motions may eventually experience a cumulative trauma disorder (CTD) in the overworked muscles, tendons and ligaments that support those muscles.

Mechanics in the Hydraulics and CSD shops and the support group who receive and set up aircraft parts must transfer hundreds of hydraulic aircraft components between pallets on the floor and shelves on the transport carts. Loading and unloading the aircraft components typically required manual lifting of motors, transmissions and pumps that are unwieldy with unevenly distributed weight. This transfer task increased workers' risk of CTDs of the back, neck, and arm.

The flat, metal, transport carts used for transfer were fitted with shelves with raised rims to prevent the loads from sliding off. The shelves were not adjustable, so that workers were required to lift loads over the rim, while bending or squatting to get to loads on the carts' lower shelves. The carts did not have handles and were moved by gripping the top surface while pushing. The wheels on the carts were attached such that the cart could be pushed in only one direction. As a result, the entire cart had to be lifted and tilted slightly to change direction and when crossing doorsills.

Mechanics were also often required to load and unload the transport carts in cramped quarters between workstations. The workstations had been designed

to drain off hydraulic fluid and so were also not adjustable. This combination of work tasks and workstation layout forced shop workers into awkward postures during transfers of aircraft parts, especially when using the lower shelves of the transport carts. The awkward postures together with manipulation of heavy, awkward parts in tight spaces increased the risk of the workers being injured.

The NADEP JAX Ergonomics Team evaluated work tasks that involved the transport carts and came up with an ergonomic solution for preventing injuries



Maneuverable cradle carts eliminate awkward lifting

and CTDs. The answer was to use carts provided with padded wooden *cradles* that fit around the specific parts being transported and that have adjustable shelves that can be positioned at ergonomically comfortable intervals. The shelves on a *cradle cart* may be adjusted to hold its load at a position that is comfortable for the men and women who lift and manage the parts. Each *cradle cart* is designed with two fixed wheels, two swivel casters,

and a waist-high handle that easily control cart movement and direction and eliminate the need to lift the cart. Some *cradle carts* are also equipped with scissors lifts that elevate cart height to that of storage shelves, another work place tool that eases lifting, eliminating the risk of neck and back injury.

Some parts that are transported between the Hydraulic and CSD shops are so bulky that it takes two persons to lift them. Now that these parts are transported using *cradle carts* with scissors lifts, the two workers can manage the part and control the lift with much greater efficiency and ergonomic comfort. Another benefit of *cradle carts* is that aircraft parts can be moved in their cradles without risk of damage due to collision since the cradles protect components from contact with and damage by other objects. The *cradle carts* also contribute to quick and easy identification of aircraft parts. Routing labels on the aircraft parts used to get pinned under parts that rolled around on the old transport carts. Labels are now attached at one specific point on parts, which are then positioned in the cradles so that the labels can be easily read.

Point of Contact: Barbara Wright, Ergonomics Program Manager, NADEP
Jacksonville

Telephone: Commercial (904) 542-2641, DSN 942-2641

Email: Wrightbl@navair.navy.mil