# IMPROVED ERGONOMIC CABLE PULLING METHOD

The Electrical Group at Norfolk Naval Shipyard (NNSY) assembled an ergonomic study team to investigate ways to improve cable pulling methods onboard Navy ships. The traditional method involves hauling the cable through overhead steel hangers by hand. The very heavy TSGU-400 electrical cable is approximately three inches in diameter and weighs seven pounds per foot. Manual installation or removal involves between 30 and 70 people working for two to three days. Not only is this method costly and labor intensive, but it also has the potential for workers to sustain muscle and back strain injuries.

The NNSY study team engineered a mechanically assisted cable pulling process that reduces the potential for injury to personnel and requires less time and effort. It uses a cable-pulling winch (capstan), double braided low stretch rope, pulleys, and Teflon sheets to reduce cable friction.

The rope is attached to the cable with a wire mesh-pulling grip and is threaded through overhead cable hangers. The winch pulls the rope and cable through the hangers.

Operation of the new system requires only 7 to 12 workers vice 30 to 70 using the old method, a 76% to 82% reduction in manpower requirements from 35 man days to 14 man days. Initial tests aboard USS SAIPAN and USS NASSAU indicate a potential for reducing cable pulling time and costs by as much as 50% with no personnel injuries. The initial test runs resulted in a combined savings to the Navy of over $118,000. Projected future savings will vary from ship to ship depending on the length of the cable run.