The SDS (SHARP Display Station) is a ruggedized, portable system for rapid screening of digital tactical image data from a digital storage system, DVD/CD-ROM, or hard disk. Originally developed as an F/A-18 squadron-level asset for use with the Shared Reconnaissance Pod (SHARP) system, the SDS can be customized to support data from multiple sensor formats, including single- and multi-band electro-optical/infrared (EO/IR), synthetic aperture radar (SAR), and hyperspectral (HSI). The ground station is built entirely from commercial off-the-shelf hardware and includes custom image processing and manipulation software. The SDS features include:

- **Rugged, COTS components**
  - Dual-processor PC with DVD±R/RW, CD-RW/DVD-ROM and AIT-3 tape
  - Three 18-inch flat panel displays
  - UPS compatible with shipboard power
  - Wide-format color printer
  - Digital storage system interface unit
  - Dual transit case rack mounting

- **Custom image processing software**
  - Multiple input devices, including digital storage system, local disk, and CD-ROM
  - Streaming waterfall of tiled image frames
  - On-demand display of full-resolution images and multi-frame chips
  - Image zoom, pan, rotate, and magnify
  - Contrast enhancement and pseudo-color
  - Object mensuration
  - Text and graphic annotation
  - Latitude/longitude and north indicators
  - User-friendly graphical user interface

- **Compatible with the National Imagery Transmission Format Standard (NITFS), the Basic Image Interchange Format (BIIF), ISO/IEC 12087-5, and STANAG 4545**

- **Integrated GPS data output with PFPS/FalconView flight mapping application**

- **Expandable to support additional sensors**

Working in conjunction with the Naval Air Systems Command (NAVAIR), the Space Dynamics Laboratory (SDL) developed the SDS ground station for use in aircrew training, mission results validation, target verification, and on-site maintenance assistance. It has been operationally proven during deployment aboard the USS Nimitz and will support future deployment aboard the USS Kitty Hawk. The SDS has also been used for developmental testing aboard the USS Kitty Hawk, for SHARP pod integration support at NAWS China Lake and NAS Paxutent River, and for training at NAS Lemoore.

The state-of-the-art image processing software on the SDS is based on technology originally developed by SDL for the US Navy’s first completely digital reconnaissance pod program. The current software is also used on their Tactical Input Segment (TIS) system. While currently configured for use with the SHARP system, the SDSs modular design allows for expansion to support additional sensors and data devices.

### Physical Specifications

<table>
<thead>
<tr>
<th>Power</th>
<th>120/220 VAC, 60/50 Hz</th>
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<tr>
<td>Weight</td>
<td>Left Case: 218 lbs. Right Case: 269 lbs.</td>
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<tr>
<td>Dimensions</td>
<td>Each transit case (including lids): 28.25 inches tall, 22.50 inches wide, 36.00 inches deep</td>
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<tr>
<td>Capacities</td>
<td>DVD: 4.7 GB, CD: 800 MB, AIT-3 tape: 100 GB, System Drive: 73 GB, Staging Drive: 147 GB, System RAM: 2 GB</td>
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The SDS is housed in two compact racks, with each rack mounted in a rugged transit case. The left rack contains the computer, a console flat-panel display with an embedded keyboard and trackball, a digital storage system interface unit, a dual-speed network switch, a power strip, and a storage drawer. The right rack contains two flat-panel displays (one flip-up monitor and one flip-down monitor), a printer, a power strip, and an uninterruptible power supply.

The SDS system decompresses and screens image data from the SHARP sensor that has been previously recorded to the digital storage system (DSS). As the NITF files are decompressed and staged from the DSS via a high-speed interface, the software displays decimated image thumbnails in a continuous waterfall of frames tiled according to the given sensor model and navigation data. The operator has full control over the waterfall's speed, direction, magnification level, and display of annotation data captured from the pod. If the data is dual mode (EO/IR), two waterfalls are used to separate the visible and infrared imagery. The waterfalls can be synchronized to aid in image analysis.

When an area of interest appears on the waterfall, the operator may select one or more frames to "chip" to a full-resolution window. The full-resolution image is the same fidelity as that received from the sensor and can be manipulated (zoomed, panned, rotated, contrast enhanced, etc.) or annotated with text or graphic overlays. Image products may then be printed, saved to disk, or disseminated to another station via Ethernet connection.

In addition to image screening and analysis functions, the SDS also provides the capability to archive data to and from the digital storage device to support data duplication and backup.

"The SDS is a valuable asset to the tactical reconnaissance community, providing the capability to rapidly screen imagery, disseminate image products, and backup mission data, all in one rugged, highly portable package."

Tiled display from SDS screener software