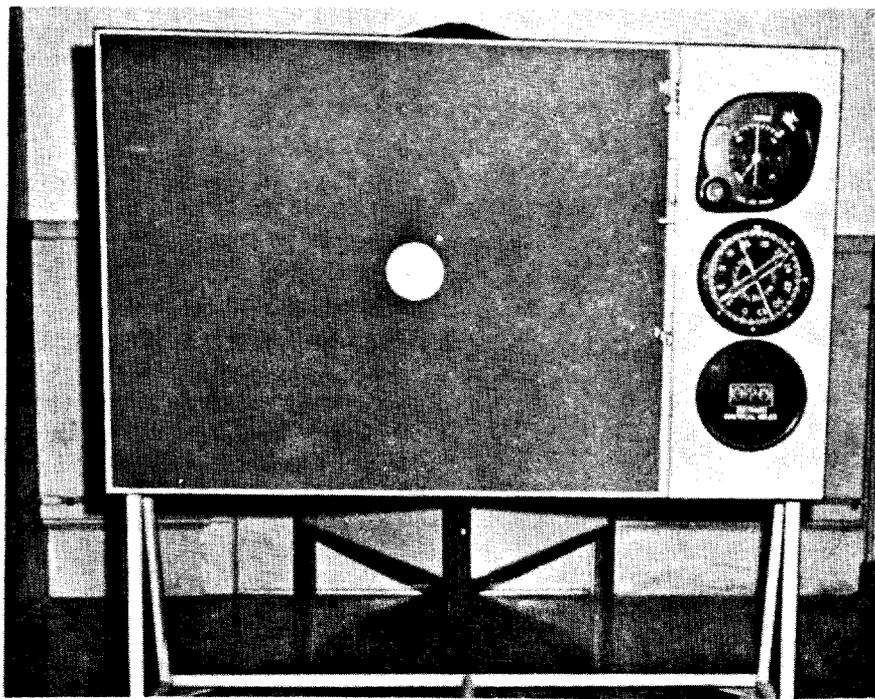


## DIRECTORY OF NAVAL TRAINING DEVICES



**NAVIGATION TACTICAL AIR, CLASSROOM DEMONSTRATOR, DEVICE 2B9A**

**TRAINING CATEGORY:**

AVIATION (Instrument)

**ORIGINATING AGENCY:**

DCNO (AIR)

**SECURITY CLASSIFICATION:**

Device 2B9A is unclassified.

**PURPOSE:**

To familiarize basic aviation students in the proper procedures for utilizing VOR, TACAN, and ADF flight indicators.

**INTENDED USE:**

For use in the classroom by flight instructors to demonstrate instrument and radio navigation procedures, using TACAN, VOR, and ADF equipment.

**FUNCTIONAL DESCRIPTION:**

Device 2B9A is an enlarged mock-up of three aircraft radio navigation instruments mounted in an instrument cabinet and connected to a framed, green, magnetic, chalkboard, which is supported by a portable stand.

The three instruments are: ID-249 Course Deviation Indicator (CDI), ID-250 Radio Magnetic Indicator (RMI), and ID-310 Distance Measuring Equipment (DME). By manipulating knobs on the instrument panels, flight instructors can manually change the courses, deviations, bearings, headings, and distances of the instruments during a lecture demonstration.

With these three instruments, the student can practice homing to a station, intercepting a course, maintaining a course, making time-distance

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checks, observing station passage, holding, entry procedures for holding and procedure turns, wind corrections, non-precision approach procedures, and standard instrument departure procedures.

The ID-250 RMI can display aircraft heading with navigational bearing data. It consists of a rotating compass card, an ADF pointer, and a VOR or TACAN pointer.

The ID-249 CDI operates independently of the RMI. The desired course can be set in the course selector window with the course set knob. The heading pointer, connected to the course set knob and the compass system, displays aircraft heading relative to the selected course. The CDI displays aircraft course deviation relative to the VOR/TACAN course selected. The TO-FROM indicator indicates whether the course selected, if intercepted and flown, will lead the aircraft to or from the station, and also indicates when the aircraft passes a course from the station perpendicular to the selected course.

The ID-310 DME is an integral part of TACAN. The DME provides continuous slant-range distance information from the selected TACAN station. TACAN presents bearing information in the same manner as VOR; therefore the same procedures can be practiced with TACAN as VOR, except that additional procedures can be used to advantage with TACAN.

The ID-249 CDI can be used to simulate Instrument Landing System (ILS) approaches, without a glide slope indication. The trainee can practice ILS course interceptions and maintaining a localizer for a front or back course approach. The ADF indicator can be used in conjunction with the ID-249 CDI

for homing to the compass locator depicted on an ILS approach plate. The ADF needle can be used to determine the bearing to a selected radio station. ADF procedures can be practiced as those for VOR, except that normal ADF interception procedures are used.

### PHYSICAL INFORMATION:

Assembled on its support stand, the device is 6' x 6' x 2-1/2'.

The device consists of three major components chalkboard assembly, instrument cabinet assembly, and support stand assembly plus a cover.

Accessory furnished is a TACAN Station Assembly, which is a metal, octagon shaped plate, 4" in height.

The instrument faces are 12" in diameter and the lettering is readable from a distance of 20 feet.

### EQUIPMENT REQUIRED (NOT SUPPLIED):

Chalk and eraser.

### INSTALLATION AREA:

Floor space 2'6" x 6", with capability of rolling the device through a standard 30" doorway.

### PERSONNEL:

Operators: Instructor or trainee

Instructors: One, flight instructor

Maintenance: One Tradesman approx. 1 hour per 40-hour utilization week

Trainees: Class of approximately 20

CONTRACT IDENTIFICATION:

Manufactured by National Instrument Co.,  
178 East Boston Post Road, Mamaroneck, NY  
10543, under NAVTRASYSCEN Contract No.  
N61339-69-C-0119.

LOCAL STOCK NUMBER:

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