

Online Aviation Selection Test Battery

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Automated Pilot Examination (APEX)

- APEX is a computer-administered ASTB, with content identical to paper-and-pencil ASTB
- Developed by NAMRL Aviation Selection Division 1995-2001
- Psychometric equivalence to paper-and-pencil ASTB demonstrated 1998
- CO, NOMI approved use of APEX for official ASTB administration 1998
- APEX installed at 5 beta-test sites 1998

APEX history

- 1998-2001 NAMRL administered APEX, data forwarded to NAMI for processing and inclusion in official ASTB database.
- 2001 APEX server moved to NOMI/NAMI, and NAMI assumed administrative responsibility
- 2002 CNET and CNRC agreed to sponsor and fund upgrade of APEX for fleet wide deployment

Required upgrade to APEX

- Current version is client-server application requiring software in the field, which presents hardware standardization concerns.
- Upgraded version will be web browser based, with secure server and all test administration software located at and under control of NOMI/NAMI
- Only technical requirement for test users will be computer equipped with standard web browser

Timeline (Projected)

- 3 of 4 programmers hired 8 July 2002. 4th expected soon. Development is now underway.
- Projected development completion date is 1 Mar 2003
- Rollout to fleet will begin after beta-testing, and will proceed gradually for further evaluation
- Full fleet-wide transition to online testing expected to be complete by late FY03

APEX Deployment

- Will be deployed to all current (~150) permanent ASTB test sites. Test administrators will be issued user ID and password by NAMI.
- Will be available on a temporary basis to non-permanent sites (e.g. deployed ships, remote units). User ID and password will expire upon completion of test.

Advantages of Online Testing

- Improved score report time
- Enhanced test security
- Reduction in paperwork, mail, phone calls
- Platform for revisions of ASTB (i.e, embedded experimental tests/test items)
- Platform for computer adaptive testing (CAT)

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Improved Score Report Time

- Currently test answer sheets are mailed to NAMI from field. Scored weekly.
- Time from testing to official results can range from 2-4 weeks.
- Online testing will provide immediate official test results

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Enhanced Test Security

- ASTB test materials will no longer be in the field
- Field-scoring materials will no longer be issued
- Will have capability to monitor and document all ASTB server hits and test administrations, by location and user
- CAT will eventually eliminate the existence of fixed test forms.

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Workload Reduction

- Online testing will eliminate the time and expense of mailing test booklets, answer sheets, etc. between NAMI and outlying test sites.
- Automatic test score feedback will greatly reduce NAMI test score call center volume and will reduce NAMI score reporting requirement.

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APEX as a Test Revision Platform

- Historically ASTB has been revised/revalidated approximately every 20 years.
- Revisions required the production of a full paper-and-pencil experimental test battery, administered to all entering flight students over a period of several years. Students were then followed to collect training outcome data.
- APEX will enable continual test revision/revalidation by virtue of its ability to incorporate embedded experimental test items or sections in real test administrations.

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- **Platform for computer adaptive testing (CAT)**

Computer Adaptive Testing (CAT)

- CAT is long-term goal of ASTB program
- Computer-Administered ASTB can relatively easily be transformed to Computer-Adaptive ASTB
- Using large test-item pool of known psychometric properties, each test administration is uniquely and dynamically tailored to the individual test taker

Computer Adaptive Testing (CAT)

- **CAT presents several advantages over traditional testing, such as:**
 - Shortened test length
 - Greater test security
 - “Unlimited” number of alternate test forms
 - Improved score reliability

Other Capabilities

- Flexibility of application will facilitate addition of new background/demographic variables as required/requested
- Will eliminate “illegal” retests by denying test session to candidate if required time limit between retests has not been met, and by presenting candidate with appropriate test form

Other Capabilities

- Format will enable measurement of expanded range of abilities. For example, unlike paper-and pencil tests, computer-based platform will enable inclusion of measures of reaction time, multi-tasking ability, and fine-motor and gross-motor skill