

Aviation Rulemaking Advisory Committee (ARAC)

Transport Airplane and Engine Issues

Meeting Minutes

DATE: December 5-6, 2000

TIME: 8:30 a.m.

LOCATION: Aerospace Industries Association of America

1250 I Street NW., Suite 1200

Washington, DC 20005

Call to Order/Administrative Reporting

Craig Bolt, Assistant Chair, called the meeting to order and welcomed the attendees who in turn introduced themselves. (See attached sign-in sheet.) John McGraw, Acting Assistant Executive Director, read the required statement for governing the conduct of the meeting. Mr. Bolt reviewed the agenda (handout 1) and distributed the Items of Interest Since September 2000, and Open Taskings Chart (handouts 2 and 3). The September meeting minutes were circulated for review.

Members then reviewed the status of Actions Items from the September 12-13 meeting, noting the following actions:

Item	Action
1	Completed
2	Completed; address of website is www.jaa.nl
3	Complete but FAA has not had opportunity to review
4-12	Completed
13	Open
14	On going
15	On going; confusion over tie-in to § 25.729 cleared; expect to have completed by year's end
16	Completed
17	Completed; tasking process has been started
18	Completed
19	Completed

Action item from the March 2000 meeting:

Item	Action
8	JAA and FAA to continue to work together on differences

Action item from June 2000 meeting

Item	Action
15	FTHWG to draft TOR for follow-on work on § 25.177(c)

FAA Report

- **Status of FAA Rulemaking Projects**—Workload database distributed electrically.

Jim Bettcher requested a discussion of the fast track process beyond June 2001, its application to future ARAC applications, use of fast track process and the report format by other ARAC issue groups, and use of working groups to write advisory material and regulatory language.

Kris Carpenter commented that the fast track process originally was a very specific program that targeted specific differences (the Better Plan identified 123 items for the FAA and 110 for the JAA). The FAA expects to remove some items from the Better Plan that are proving to be too controversial for the fast track process. Future taskings are not expected to be included in the fast track program, and the FAA's internal expedited process will cease because of the impact on FAA resources. She further reported, however, that the FAA would probably continue to use the fast track report format as it relates to the TAE issues group to the greatest extent possible.

Mr. McGraw reported that at least one harmonization working group under the Air Carrier issues group is using the fast track report format as a vehicle to communicate suggested rule text or concepts; the group, however, is not using the accelerated process to track its progress. He indicated that differences in the structure of the terms of references for the working group indicated overlap and potential conflict because the rules are intermingled.

- **Proposed New Taskings**
- Cabin Air Quality—Assigned to Emergency Evacuation (EE) issues group with coordination with TAE issues group. Comments should be sent to Ms. Carpenter by 12/15. Edmond Boullay requested that a reference to the UK Report be included in the TOR. (The name of the EE issues is expected to be changed to Occupant Safety to broaden its scope of taskings.)
- Amendment 25-87—TAD expects to present at the January rulemaking council with tasking to TAE issues group by spring
- **Status of Other TOR's**
- Multiple Complex Supplemental Type Certificates and Fuel Vent, Part 25 and Retrofit-- TOR's have been approved by the FAA rulemaking council (RMC)

- TOR's Approved by Harmonization Management Team--§ 25.1322 and AC 25-11; 25.603 and 25.683, materials and operations; 25.903(d), rotorburst (FAA awaiting comments); and flight loads distribution
- In Coordination But Not Yet Approved--§ 25.729, landing gear retraction, and tire burst
- TOR's In Coordination Between FAA and JAA-- low fuel warning, engine retention, pilot seats, nose wheel steering, 25X745, and engine cowl retention.
- **FAA ARAC Guidance--**Guidelines for addressing comments distributed to working groups in October. Minimum interim guidance being developed to address minimum participation in working group, protocol for changing schedules, adding new members to already established working groups, and criteria for voting members. Ms. Carpenter indicated that the FAA had worked with the TAE and EE issue groups to develop guidance that is currently being reviewed by the FAA.

JAA Report

Mr. Boullay reported that the JAA is preparing comment response documents for the five unilateral Notice of Proposed Amendments (311 thru 315) published in August. He indicated that a comparable NPA resulting from the last harmonization report is being prepared as NPA 25-321. Final agreement on the final rules is expected by June 2001.

Transport Canada

Mr. Maher Khouzam announced that TC signed the IPA on certification of product with the US on October 18. TCAA approved the Change Product Rule (CPR) with no dissent from the industry. It expects to proceed within the same FAA/JAA timelines. TCCA and the FAA agreed to share CPR training material.

TCAA anticipates industry acceptance and participation to combine several Canadian Aviation Regulations (CAR), including CAR 511 (Type Certificate) and CAR 513 (Supplemental Type Certificate) into CAR 521 which will be compatible with FAR 21 and JAR 21.

Harmonization Management Team (HMT)

Mr. McGraw indicated that industry presented three issues to the HMT:

- FAA progress on the Better Plan for Harmonization—Concern that FAA is not on track and request a schedule for completion of the activity. *At the FAA/JAA June 2000 meeting, the FAA proposed to return 20% of the reports to the working groups by the end of the calendar year (2000). As it looks, the FAA will be short of the 20% goal by no more than 2 reports. The FAA agrees that schedules are needed and is working toward a document that incorporates the entire process (including final rule publication in the schedule; expects to be completed for presentation at the next HMT meeting.*

Also the FAA committed to developing schedules to complete 30% of the fast track reports within the next 2 years. FAA trying to streamline process.

- Harmonization of future rules. *FAA and JAA have drafted proposed procedures that need to be coordinated within the respective authority before being brought to the HMT*
- Harmonization of FAR/JAR 39. *Industry has briefed JAA, but not FAA. Too early for any decision.*

Discussion items included number of better plan projects expected to be completed within the next 2 years through phase 5, i.e., publication of NPRM--50 percent, and categories that will be

covered (majority will be category 1, but some categories 2 and 3 are expected to be included). Other items included the difficulty of processing nonsafety-related rulemakings, benefit of using fast track to address better plan items, and scheduling working group meetings based on FAA anticipated dates for returning rulemaking projects. Participants also noted the achievement of ARAC--involvement of interested parties/measurable improvement on the process, improved and enhanced quality of rules--and the failure of the FAA to expeditiously process ARAC recommendations—bottlenecks such as economical and legal analyses, were never addressed.

Bob Robeson noted that periodic meetings of EXCOM and the preparatory meetings of the Gang of 7 (Office of Rulemaking Director and former ARAC Chairs) continuously look for improvements in the ARAC process. He noted, however, that FAA rulemaking resources are limited and cause bottlenecks. He emphasized the need to keep the fast track process alive in ARAC.

Executive Committee (EXCOM) Report

Mr. Bolt reported that the EXCOM met in November. Highlights of his update included:

- Office of Rulemaking has made its web page (<http://www.faa.gov/avr/armhome.htm>) more user-friendly
- Following a briefing, the EXCOM approved the Fuel Tank Inerting Working Group work plan
- Proxy voting is unacceptable; at working group and issues group levels, the intent is to have consensus of the body of representatives
- At working group level, voting should only be used to determine if you have consensus. If no consensus, working group should provide minority and majority opinions.
- At issues group level, if members are unable to reach consensus, minority and majority opinions should be cited and package should be forwarded to the FAA
- DOT Order 1110.30C instructs "member. . . unable to be present shall assure attendance of an alternate at meetings"
- Use of telephones, teleconferencing, and videoconferencing encouraged
- ARAC meetings should be held in the Washington, DC area and in federal buildings, whenever possible. If it is more prudent, i.e., economically or for attendance, purposes, to meet outside the DC area, request must be submitted to Tony Fazio, Director, Office of Rulemaking
- Meeting Dates for 2001 are as follows:
- March 27-28, December 4-5, Washington DC
- June 26-27, September 11-12. Renton, Washington

Brenda Courtney provided the following administrative updates:

- FAA plans to update "green book" this fiscal year; plans to look at fast track to see what parts can be included in procedures; will provide periodic updates
- The Air Carrier Operations Issues Group liked the questions for part 25 in the report format and is looking to see if any questions would help the group formulate its recommendations; intends to use FAA resources to draft regulatory language
- FAA working on ARAC website to make it useful to everyone, including working group members
- Regarding question of having foreign interest, e.g., Canadian/Brazilian co-chair working group, Tony Fazio's immediate reaction is that it may be "inappropriate." Industry to develop issues paper on its view. Mr. Bolt agreed to check further with Mr. Fazio.

Human Factors Harmonization Working Group (HWG)

Curt Graeber and Sharon Hecht, reporting via telephone, indicated that the 41-member working group had been divided into four subgroups that are reviewing rules and advisory material, incidents/accidents, and regulations. The working group is attempting to redefine and validate the criteria to sort data (process and experience) by looking at certification issues only (have eliminated operational, training, and maintenance issues and airline procedures). The interim report is expected to be ready by April 2001.

In addition to notifying TAE members of the death of working group member Eric Fiore, Mr. Graeber indicated that the ATA member had quit the working group, but he expected ATA to provide a replacement soon. He provided the future meeting schedules and indicated that the working group was working with the Avionics HWG to collocate meetings in order that the FAA representative could meet with both groups.

Mr. Bettcher expressed concern about application of the criteria (aviation safety, effects on industry, and industry/authority acceptance) at the subgroup level and the potential for such information/decisions to go unreported. Mr. Graeber assured him that the intent was to make subgroups come up with recommendations that would improve safety and to think about the whole picture. He also indicated that the subgroups are expected to have complete transparency. All inputs including those that were not accepted would be recorded into the report. The availability of the working group status report at the TAE meetings was also discussed; status reports can be obtained at the working group's website: <http://www.researchintegrations.com/hf-hwg/index.htm>. Paulo Olenscki indicated that Embraer was interested in participating in the working group. Mr. Graeber indicated that Embraer's opportunity to work with the working group might be hampered by the group's operating rules that prevented new participants after a certain time. However, Messrs. Graeber and Olenscki agreed to speak further after the meeting.

Seat Test HWG

Ms. Carpenter reported that the FAA is setting up an internal implementation team to determine how to handle recommendations from the working group report. Next required action is in hands of the authorities; FAA may be developing an advisory circular.

Design for Security HWG

Mark Allen distributed a summary update report that highlighted the working group's focus group and included its 2001 meeting schedule (handout 4). Additional discussion items included clarification of incendiary devices and bombs; sources of air or fire in the cockpit; decreasing concentration of carbon monoxide with fresh air; current fire suppression systems; use of redundant systems; separation of systems; reconciliation of current designs with least risk bomb locations; and criteria used for determining threat. Other discussion items included fuselage locations used for hiding contraband items; knowledge of bomb risk locations; assuring adequate ballistic protection in flight deck area from passenger compartments; standards/analyses used to insure ballistic protection; and criteria for determining entry delay to penetrable areas and applicability to parts 25 and 121. Members were urged to give any comments addressing the terms of reference for flight deck intrusion directly to Mr. Allen.

Flight Guidance System HWG

John Ackland distributed a report detailing the working group's activity, status of activity, and proposed schedule (handout 5). Discussion items included sufficient time for TAE members to review package, conflict between working and issues group meetings scheduled at same time, and identification of minority opinions. Mr. Ackland indicated that he would attempt to complete work product by the March HWG meeting.

System Design and Analysis HWG

Ms. Carpenter indicated that the FAA intends to return the TAE submittal addressing § 25.1309 (also includes 25.901(c)) to working group by spring 2001. Data that supports specific risk will be included with the package. The JAA has already issued the NPA for JAR 25.1309.

Mr. Ackland questioned the need for returning the package since the TAE disagrees with the FAA opinion and a review would represent a "rubberstamp" by working group. When questioned about official notification from the FAA to the TAE on returning the package, Mrs. Carpenter indicated that a September 13, 2000, letter from Beth Ericson to Craig Bolt served as that notification. She also clarified the use of "fast track" in the letter. Mr. Ackland also explained the impact of § 25.1309 on § 25.1310, as well as another aspect of § 25.1309 not included in the package submitted to the FAA.

Engine HWG

Jerry McRoberts presented a package for TAE approval containing a proposed rulemaking and advisory material addressing engine control system (§ 33.28). Following a discussion of inclusion of the minority position in the preamble and the relationship to airframe requirement, members approved the package for forwarding to the FAA for formal legal and economic reviews.

Mr. McRoberts presented activity reports for two other tasks (handouts 6 and 7).

Section/Task	Discussion/Action
Critical Parts	--Will harmonize § 33.14 and JAR-E 5.15 --Expect to submit for TAE approval for the December 2001 meeting
Bird Ingestion Requirements 2	--Population of large flocking birds have grown --Database only has events up to 1994 --Discussion items include getting better databases and voluntary vs mandatory recordings; Mr. Bettcher asked Mr. Roberts to provide a response at the March TAE meeting on how working group is improving reliability/accuracy of ingestion event reporting data --Other issue is managing bird threat as it relates to older fleet

Powerplant Installation HWG

Mr. Andrew Lewis-Smith, reporting by telephone, provided the following updates for fast track reports distributed in October:

Section	Discussion/Action
25.945 25.973	<p>--Nothing controversial, enveloping exercise</p> <p>--Unanimous approval to submit fast track reports</p>
25.1181	<p>--Nothing controversial, enveloping exercise</p> <p>--Added reference to 25.863, .867, .1185, and .1203</p> <p>--Discussion item—compatibility with engine parts</p> <p>--Unanimous approval to submit fast track report</p>
25.1305	<p>--Nothing controversial, enveloping exercise</p> <p>--Discussion item—required audio warning for thrust reversers</p>
25.1187 and .863	<p>Discussion items included:</p> <p>-- PPIHWG approval process (FAA opposition not included in report)</p> <p>--no new TOR is necessary; working group in process of forming team</p> <p>--working group would like to separate out sections into separate advisory circulars</p> <p>--having working group revise timeframe to 9- to 12-month period (possibly ready for September 2001 meeting)</p> <p>--nothing relevant to Swiss Air 111 investigation</p>
25.904, Appendix I	<p>Discussion items included:</p> <p>--How Flight Test HWG (FTHWG) is working issue since it currently has no task assigned.</p> <p>--Mr. Smith indicated that the JAA Flight</p>

	<p>Study Group is working the issue and through Bob Park intends to pass it on to the FTHWG; Mr. Bettcher concerned because JAA Flight Study Group is not a part of ARAC</p> <p>--Having feedback at March TAE meeting</p>
25.903(d) (rotorburst)	<p>Discussion items included:</p> <p>--Working group rejected TOR in present form</p> <p>--Need to include reporting for other tasks, other than those included in Better Plan</p> <p>--FAA wants TOR revised to clarify applicability to include engine burnthrough</p> <p>--Mr. Bolt to resend revised TOR to members; Ms. Carpenter to send as official tasking</p>
25.1193(e)	<p>Sent to TAE 9/29; voted on electronically in October</p>

Regarding future tasks, Ms. Carpenter indicated that the FAA rulemaking council (rmc) had approved tasking fuel tank venting to the TAE, but that tasks addressing cowl retention and powerplant instruments still needed to be approved by the HMT.

Ice Protection HWG

Mr. Dennis Newton distributed a status report (handout 8) and then proceeded to discuss the tasks

Task 1--Mr. Newton indicated that FAA tech writer had returned the draft operating rule and AC with numerous changes and comments. He questioned the working group's responsibility to responding to FAA comments (from directorates and ACO's) and the constraint placed on the working group's meeting time. Discussion items included the responsibility of the FAA representative to respond to questions from the ACO's, the need to clarify ambiguities in the preamble, and format of the response. Mr. Newton was advised to provide short discussion on how issues were resolved. Mr. Newton indicated that he would have a draft operational rules at the March TAE meeting.

Task 2--Mr. Newton indicated that the report out was essentially the same as the September meeting. Discussion items included type of information and technology available to working group for completing report; type of information expected to be included in report; disagreements and resolution among working group participants; and impact of limited resources, loss of working group members, and scheduling conflicts on contents of report. Dave Lotterer underscored Mr. Newton's concerns about resources and indicated that some concerns might not be resolved until the comments to the NPRM are reviewed.

Tasks 4-7—No change.

Mechanical Systems HWG

Pat Waters distributed a working group report (handout 9) and provided the following updates:

Section	Action
25.851(b)	--Working group rewriting draft to include concentration and type of extinguishing agent --Expects to forward to TAE in May for vote at June meeting
25.1453	--Extensive difference between FAA and JAA requirements, with JAA having descriptive ACJ for meeting requirement-- US has no associated AC --Discussion items included appropriateness of the term "national regulations" in the rule --Participants approved unanimously to send letter to FAA and JAA requesting that statement in report be reviewed.

General Structures HWG

Mr. Bolt reported that Amos Hoggard was unable to attend because the working group was meeting in Amsterdam to complete work on § 25.571. He indicated that Mr. Hoggard would provide updates at the next TAE meeting, and that the FAA had returned bird strike (§ 25.571(e), .631, and .775(d)) to the working group. Also, Ed Kupcis questioned the status of category 2 fast track items.

Airworthiness Assurance Working Group

Brent Bandley gave an overview of the events affecting widespread fatigue damage before presenting it to the TAE issues group for approval to forward to the FAA for economic review. He indicated that TOGAA in an October 3, 2000, letter (handout 10) endorsed what the working group is doing with widespread fatigue damage even though some individual members have differing views. Edit and legal reviews have already been completed; once the economic review is completed and returned to the working group, the package will be returned to the TAE issues group for approval.

Mr. Bandley indicated that the rule was limited to structural maintenance programs which would have to be in place to address corrosion problems. Discussion items included overview of the static strength approval process, inclusion of aircraft models that go beyond the current 11 that have been identified, compliance by operators who pickup retired airplanes, and obligation of manufactures to assist operators. Members gave unanimous approval to forward the package to the FAA for formal economic review.

Flight Test HWG

Robert Park, reporting by telephone, provided a status report of the working group activities (handout 11). He indicated that there had been no activity in the working group since the last TAE issues group meeting and that no meetings were scheduled for the rest of the year. The authorities are working on a draft TOR addressing § 25.177 that is expected to be forwarded to the working group and possibility be provided to the TAE at the March meeting.

Ms. Carpenter indicated that the FAA intends to draft proposed rule addressing minimum maneuvering speeds and provide it to the working group for review. At this time, the FAA is not planning to task stall warning for flight in icing conditions; contaminated runways will not be tasked before August.. It was noted that the PPIHWG thought the FTHWG would be reviewing the critical time interval addressed in appendix I of § 25.904. The Air Carrier Operations Group has completed its report on this subject.

Load and Dynamics HWG

Larry Hanson, reporting by telephone provided the following updates (handout 12):

Section	Action
25.415	--Discussion item included effect on the pilot, keeping the pilot in the loop, and clarification of subparagraph (g)(2) --Language to be added in transmittal letter will provide clarification --FAA to remove from fast track --Issues group will vote for approval by e-mail
25.865	--Working group suffered setback regarding definition of fireproof --Structural fireproof rating has been defined and testing will be done at baseline --Working group report for advisory circular will be completed at March 6-8 HWG meeting
25.671(c)(2) and 25.1309	--Looking at inadvertent impact of new rules AC 25.1309 and § 25.671 requirements --FAA developing issue paper --Plan to complete task at March HWG

	<p>meeting</p> <p>--Discussion on difference between peak risk and specific risk</p> <p>--HWG plans to forward any information that it develops to Flight Control HWG</p>
25.671(c)(3)	<p>--Lots of progress</p> <p>--HWG expects to complete at March HWG meeting and forward to issues group for vote at the June issues group meeting</p>

TAE issues group also discussed the work plan submitted by the working group for three TOR's (handout 13). Discussion items included a description of the two task groups that would be set up, the addition of a representative of the gear manufacturer to the task group, completion dates, and coordination of TOR addressing 25X745. Other items included concern for survey methods; Mr. Bettcher and Mr. Hanson agreed to discuss further after the meeting.

Ms. Carpenter indicated that the TOR for flight loads had been presented to the rmc and deferred to its January 2001 meeting; concern expressed about FAA resources when completed task is returned to FAA.

Flight Control HWG

Larry Schultz, reporting by telephone, indicated that little had changed in the December activity report (handout 14) from the September report. Discussion items included specific risk associated with § 25.1309 and opportunity for HWG to review once specific risk is "nailed down"; resolution of dissenting opinions, status of resolutions, and disposition of dissents; and use of facilitator at next working group meeting to resolve dissenting opinions.

Avionics System HWG

Clark Badie indicated that most of the fast track reports are in the system, and that the tasking for § 25.1322 had not yet been published.

Mr. Badie further indicated that the working group is looking for direction on two issues regarding FAR/JAR 25.1333(b). Current practice addresses heading/air speed operation done with common standby indicator, and something needs to be specified other than a whiskey compass; current requirement is out of step with industry practice.

Philippe de Gouttes indicated a need to clarify § 25.1327, citing that the proposed NPA conflicts with the fast track. He said that the JAA has published a report and there appears to be a duplicative effort with it and the DandF study group.

Mr. Badie was instructed to draft a proposed TOR and have the JAA representative in the working group check on the status in the JAA.

ETOPS Tasking Update

Mr. Bolt indicated that the working group was meeting in Dallas, Texas, December 5 and 6, and that it planned to finalize a work plan for presentation to the issues group the following week. Mr. Bolt indicated that he would distribute the approved work plan to TAE members.

Electromagnetic Effects HWG Report

The FAA expects to complete the regulatory evaluation addressing HIRF in March. Ms. Carpenter indicated that she would check the status of lightning protection and report on it at the next TAE meeting.

Electrical System HWG

Brian Overhuls distributed a working group activity report (handout 15) and summarized the group's activity, noting the number of tasks that the working group had completed through phase 3. Discussion items included the working group's method of reviewing PNPA 25DF-317; the FAA's method for determining when working group are tasked to provide disposition of comments to NPRM's, status of TOR regarding passenger electrical installation; and assignment of wiring standard related to aging aircraft being assigned to the ESHWG.

Ms. Carpenter agreed to compare the ESHWG TOR package with what is on the FAA's plate and determine the necessity to task. She indicated that there is no problem with tasking proposal 1; however it is unclear whether FAA will approve proposals 2 and 3. She further indicated that the FAA would look at separating §§ 25.1309 from 25.1310 in accordance with a letter from the ESHWG.

Wrapup

Mr. McGraw indicated that a number of TOR's have been recommended and that the FAA will need to prioritize them.

Action Items: Mr. Bolt reviewed the Action Items.

Future Meeting: Mr. Bolt reminded members of the March 27-28 meeting to be held in Washington, D.C.

Public Notification

The *Federal Register* published an announcement notice of this meeting on November 22, 2000.

Approval

I certify the above minutes are accurate.

Craig Bolt

Assistant Chair

Approved with Revisions: March 7, 2001

ACTION ITEMS

(December 5-6, 2000)

1. Kris Carpenter to provide schedules to WG's as to expected phase 4 activities and HMT report by March TAEIG.
2. K. Carpenter to provide update on status of FAA implementation team for Seat Test Fast Track Reports.
3. Industry members of TAEIG to provide Tony Fazio with industry view of having non-US members act as co-chairs of WG's. C. Bolt to coordinate by 12/22.
4. Resend 25.903(d) proposed TOR to TAEIG. (C. Bolt).
5. K. Carpenter/C.Bolt to get update on status/schedule of taskings of GSHWG.
6. C.Bolt/L.Hanson to provide clarifying text for 25.415(g)(2) and provide for e-mail vote.
7. K. Carpenter to insure proposed TOR for 25X745 is not in conflict with existing LDHWG task for 25.509.
8. K.Carpenter to get update on status of Lightning package and provide to TAEIG.
9. K. Carpenter and J.McGraw to investigate if 25.1310 can be broken out of 25.1309 package to maintain harmonization with upcoming JAA NPA.
10. K.Carpenter to compare ESHWG proposed TOR's to outstanding taskings to determine what needs to be tasked versus what is covered by existing tasking plus what FAA wants to task by 2/7/00.
11. K.Carpenter and T.Sulocki to understand current status and plans for 25.1327 in both FAA and JAA systems
12. B.Courtney will notify C.Bolt when WG membership will be updated on ARAC bulletin board. C Bolt to send WG membership lists to TAEIG.
13. Recommendations for co-chairs of System Analysis HWG to C. Bolt and J. McGraw.

Open Items from March 2000 Meeting

T. Sulocki and Kris Carpenter to determine how JAA/FAA will address lack of harmony in 25.562 seats. (JAA rule does not include pilot or flight attendant seats, FAA rule does, but some exemptions have been granted for pilot seats regarding pitch and roll.)

Open Items from June 2000 Meeting

FTHWG to draft TOR for follow on work on 25.177(c).

Open Items from September 2000 Meeting

T. Sulocki to review letter from Powerplant Study Group regarding concerns on LDHWG report for 25.963(d) and to determine path forward by next LDHWG meeting on September 26-28. (Open T/D 1/6/2001)