Change Request Initiation and Control

Description	Management should ensure that all requests for changes, system maintenance and supplier maintenance are standardized and are subject to formal change management procedures. Changes should be categorized and prioritized and specific procedures should be in place to handle urgent matters. Change requestors should be kept informed about the status of their request.
	IT management should ensure that change management, and software control and distribution are properly integrated with a comprehensive configuration management system.
	The change process should ensure that whenever system changes are implemented, the associated documentation and procedures are updated accordingly.
	IT management should ensure that the release of software is governed by formal procedures ensuring sign-off, packaging, regression testing, handover, etc.
	Specific internal control measures should be established to ensure distribution of the correct software element to the right place, with integrity, and in a timely manner with adequate audit trails.
Control Notes	There is a formal procedure for changes right from problem report and change request till its solution. Operational documents are also prepared for changes. The changes are also approved and accounted for.
	The system developed and implemented in 1997 did not completely fulfill all the business requirements. Changes have been necessitated not only due to changes in the Annual Finance Act and changing technology from time to time but also due to shortcomings in the system as pointed out by the assessing officers/users.
	The charges for development of any additional query/report programmes or to undertake substantial modifications/changes are negotiated separately. The work has been awarded to Tata Consultancy Services without inviting tenders from other prospective contractors. Rs. 83.78 lakhs have been paid to TCS during 2000 to 2005 for carrying out changes to the AST software.

Management Response	There have been only 32 changes to the AST Software since its inception and most of them have been because of changes in the IT Act. The work has been awarded to TCS through an open tender. Since these systems were being set up for the first time there were no live databases and testing had to be done in a simulated environment.
Assessment	A review of the changes carried out in AST revealed that majority of the changes were not because of external reasons such as amendments to the Finance Act etc. and were in the nature of design deficiencies. The fact the system has required so many changes is indicative of the fact that there were weaknesses in • Communicating the User Requirements to the developer; • Inadequate scrutiny before acceptance of design; and • Incomplete User Acceptance Testing. User Acceptance Testing was done on a very limited scale and only in a simulated and not real field environment. Open tender process was not followed while awarding the contracts for changes to the system.
Recommenda-tion	27. User Acceptance Testing should be reviewed. The contract for changes in the software should be given after due procedure.

Impact Assessment

Description	A procedure should be in place to ensure that all requests for change are assessed in a structured way for all possible impacts on the operational system and its functionality.
Control Notes	Whenever the software is modified through patches by DIT (System), the system does not have any provision to identify similar type of errors/mistakes that occurred in the processed data (by raising queries or reports) and to rectify the same. Directions for manual checking for errors are sent by the DIT (Systems). No impact assessment study is undertaken and no queries are run to identify the errors in the system so that they may be rectified. Instances have been noticed where users have pointed out invalid rates, dates etc. in the system. While these have been rectified later, impact assessment of the time lag has not been carried out in the system. Appendix B details an attempt at a limited impact assessment.
Management Response	Impact assessment is carried out before incorporating any changes in the application modules; the modification is fully tested by the developer and the module incharge before release. AST Instruction 21 through which directions for manual checking were sent was due to a one off situation, due to a specific ordinance being effective from the date of its promulgation.

Assessment	There is no method of impact assessment for the changes carried out in the system. This could lead to errors remaining un-rectified in the system with risk of loss of revenue. Audit found that though change impact assessment is being done through testing of patches the impact in terms of the business requirement of calculation of tax/interest/refund is not being done or being asked to be checked manually.
Recommendation	28. An impact assessment feature should be built into the software and used after the incorporation of changes.

Control of Changes

Description	IT management should ensure that change management, and software control and distribution are properly integrated with a comprehensive configuration management system. The system used to monitor changes to application systems should be automated to support the recording and tracking of changes made to large, complex information systems.
Control Notes	Code changes, check in and check out procedures for changes exist. This is done through PVCS version control management. The changes made were approved and accounted for. The patches made by TCS are sent to the RCCs for incorporation through a separate procedure for each of them.[28] There is no set down procedure to ensure timely incorporation of patches at RCC to monitor the time taken.
Management Response	The overall system was designed in 1994 on client server architecture which was the best available model considering the state of technology and communication infrastructure then available in the country. In a regionally centralized, model changes have to be implemented separately in each RCC. Procedural safeguards are in place and AST Instruction No 19 shows that monitoring is being done. Further computed figures of interest can be manually corrected. In Phase III all RCC databases are being consolidated into a single national database.
Assessment	As pointed out no systematic/inbuilt monitoring in respect of time taken to execute changes by RCCs is available. The regionally centralized model has led to the need for replication of efforts to deal with program changes in AST[29].
Recommen-dation	29. A monitoring system for recording and tracking changes should be built into the software.

[28]AST Instruction No 19 points out irregular version updating by RCCs

[29]Please see Identify Automated Solutions