

Checklist	Remarks	Action (X)
<p style="text-align: center;">Project System Audit Bulk (Piping) Take-off</p> <p>Note: Not all items of the checklist shall be checked. It depends on the status of the work and whether it is the first, second or third audit.</p> <p>1. Project Definition</p> <p>1.1 Has the spare part philosophy (contingency) been spelled-out (in e.g., the PPEM) for the various piping account codes and components to be purchased?</p> <p>2. Engineering Technical</p> <p>2.1 Have the special job requirements been identified and discussed with the piping supervisor and confirmed in minutes of meeting(s)?</p> <p>3. Engineering General</p> <p>3.1 Are job related internal instructions used?</p> <p>Planning</p> <p>3.2 Have milestones been indicated for bulk material take-off's (BMTO's) with regard to priorities i.e:</p> <ul style="list-style-type: none"> • exotic materials? • alloy materials? • killed CS materials? • normal CS materials? <p>3.3 Have the priorities with respect to:</p> <ul style="list-style-type: none"> • hot services • cold services <p>been included with the above?</p> <p>Plotplans</p> <p>3.4 Have the (B)MTO's except for normal CS at average temperatures been based on studies,</p>		

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including (preliminary) stress analysis and relevant supporting details?		
3.5 What is the issue status of the overall plotplan of the entire project facility?		
3.6 What is the issue status of individual and/or unit area plotplans concerned on which the piping studies etc., have been made and approved?		
EFD'S/UFD'S/LDT'S		
3.7 Are PFD's, EFD's, UFD's & LDT's properly recorded in an index (document list)?		
3.8 What is the status of the equipment list and EFD's/UFD's with relevant LDT's used for the (B)MTO?		
3.9 Are (B)MTO's being made on a line-by-line basis or line per area basis?		
3.10 What is the issue status of the C2 specification used for the most recent (B)MTO?		
3.11 What is the total number of pipe classes and how many classes are currently on hold?		
3.12 Have pipe classes for vessel trims been indicated on the EFD's/UFD's?		
3.13 Are certified standard piping hook-ups for equipment and instrumentation available and being used for the (B)MTO?		
3.14 Have instrument vessel sketches been provided as a design/study basis?		
3.15 Has a separate file been set up for the (B)MTO effort? How has this file been organized as far as take-offs in relation to various issues of EFD's/UFD's/LDT's/ISO's and C2 specs?		
3.16 To what extent are MTO EFD's/UFD's marked with the name of the MTO person, check date and related MTO issue?		
3.17 Have EFD's/UFD's with relevant LDT's plus updates of the C2 specification been issued regularly and in sequence with the required priorities?		
3.18 Has the piping lead man issued a check		

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<p>list/transmittal including status report for above ground piping material take off to the project/engineering manager?</p>		
<p>3.19 What is the (B)MTO updating approach after receipt of updated EFD's/UFD's/LDT's and/or C2 specs?</p>		
<p>3.20 Has a BTO coverage check been made versus allowed contingencies at each take-off?</p>		
<p>3.21 Are the number of "holds" on take-offs from EFD's/UFD's with relevant LDT and C2 specification for each take-off kept within an acceptable %?</p> <p>Are these holds anywhere recorded?</p>		
<p>4. Job Control</p>		
<p>4.1 Has the budget for the piping BTO group been defined?</p>		
<p>4.2 Have planned milestones been met in time?</p>		
<p>4.3 Are changes in the scope of work being processed in time?</p>		
<p>4.4 Are the Project Execution Control (PEC) and scheduled manhours being adjusted based on the approved project variations?</p>		
<p>4.5 What efficiency is reported in PEC for the MTO effort?</p> <p>State date.</p>		
<p>4.6 How does the final expected manhours requirement relate to the assigned manhour budget?</p>		
<p>4.7 To what extent and by whom, are the planning, cost and engineering managers informed, when changes and/or slippages are encountered?</p>		
<p>4.8 On the planning list, how do the actual dates "for bids" and "for purchase" relate to the original schedule date?</p>		

5. Additional Questions

Product Audit Checklist

Note:

Any major deviation from requirements shall be tagged in the 'No' column and be elaborated on in the main report under Product Audit Findings.

Documents reviewed:

Questions	YES	NO	NA
1. Are input data available?			
2. Have they been formally issued?			
3. Have the data been qualified? (what is/is not included)			
4. Have they been screened for completeness?			
5. Have calculations been performed?			
6. Have these calculations been checked?			
7. Has the product been formally checked?			
8. Is checking evidence available?			
9. Do the issued documents contain sufficient information?			
10. Have multi-discipline input/comments been obtained?			
11. Are the issued documents checked for compliance with client, licensor and authority specifications?			
12. Have all deviations from client, licensor and authority specifications been discussed and formally agreed upon with the relevant party?			
13. Are supplier data included in the document?			
14. Have supplier data been qualified?			
15. Have all requirements of the document been covered?			
16. Have the document requirements been discussed with the internal client?			
17. Have the document requirements been discussed with the external client?			
18. Have any comments been received on earlier issues of the document?			
19. Have all comments been incorporated in later issues?			
20. If not, has agreement been reached about the implementation of comments?			
21. Have changes been clearly indicated?			
22. Has the PM or EM been involved in this discussion in case of comments from the client?			
23. Has the document been reviewed by the discipline manager or his delegate, if required?			
24. Has the document been formally approved at the proper authorization level?			