

Appendix B

GMF Representation of Ternary Complex Column Sequences

B.1 Rearranged GMF Ternary Complex Column Sequences

As specified in Section 5.2.1, the 10 GMF structural alternatives for the Ternary Complex Column Sequencing problem (Figures 5.5 and 5.6), were rearranged for the facilitation of the construction of the GMF superstructure. This rearrangement affected, essentially, only the Side Petlyuk Column, which was eliminated from the set of alternative structures, and the Side Stripper and Side Rectifier Sequences, which were appropriately restructured. The final GMF representation of the 9 Ternary Complex Column alternatives is shown in Figure B.1.

B.2 STN Representation of GMF Complex Column Sequences

The alternatives of Figure B.1 can be represented in a State Task Network (STN) formalism, as shown in Figure B.2. Each M/H module can perform one or more separation tasks and the States are the products of the separation tasks. The arrows represent the separation tasks carried out by the corresponding M/H module (the number above each line corresponds to the number of the M/H module, as shown in each one of the alternative sequences). Since the GMF allows the free distribution of components (no simplifying assumptions of sharp splits need to be made), all the components, for this case, A, B and C, can be present at each state. Components in parenthesis indicate participation of these components only in small amounts. For instance, the state (AB)C, indicates a stream with high concentration in C and small concentration of A and B.

The tasks that take place in each M/H module can be found in Table B.1. The ‘/’ indicates the split that takes place. For instance, ‘AB/C’ stands for the general separation of component C from A and B. As shown in Table B.1, M/H modules 1 and 2 perform multiple tasks (*one-to-many*), whereas the other 4 M/H modules perform the same tasks.

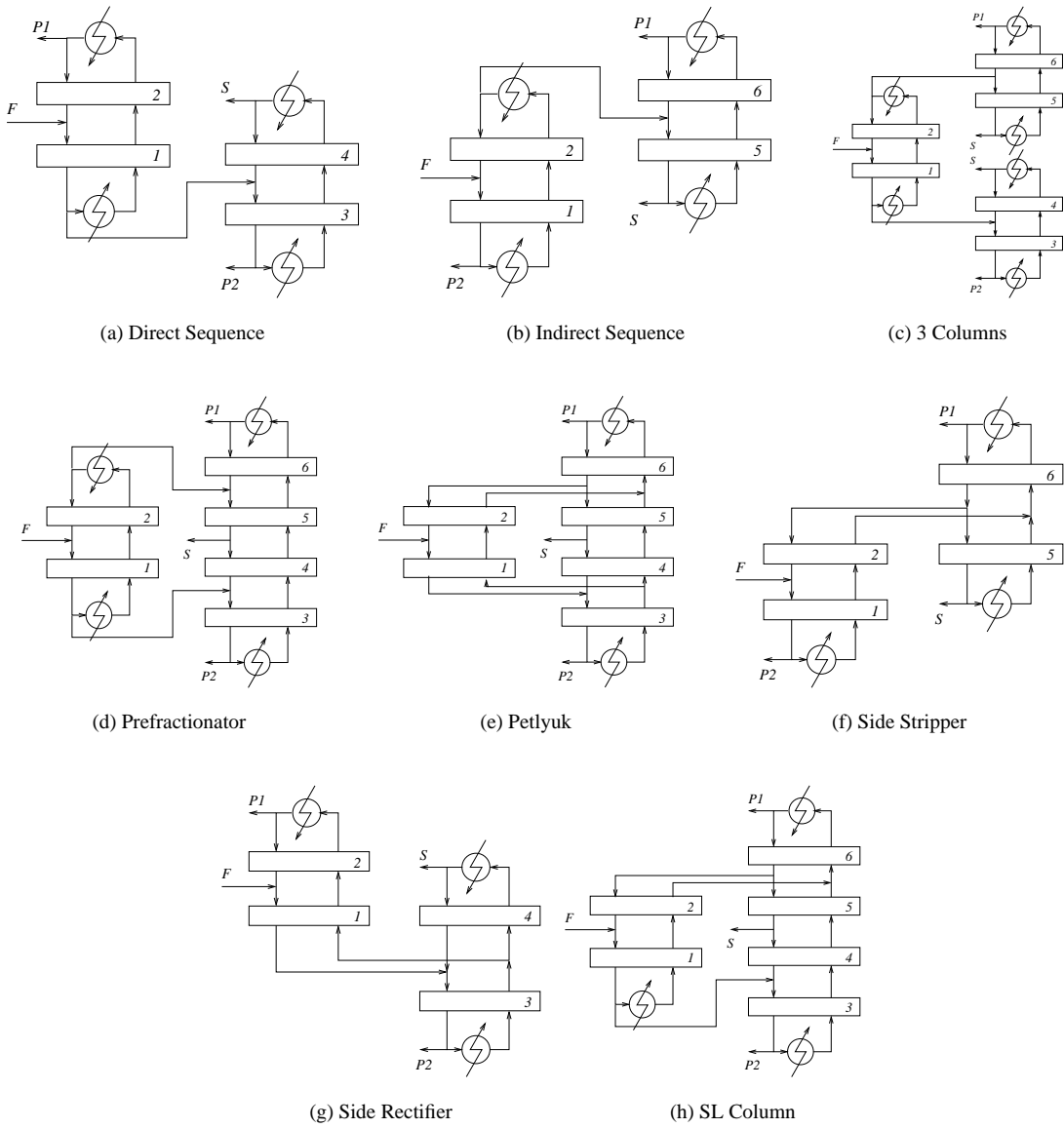


Figure B.1: Rearranged GMF Complex Distillation Column Alternatives

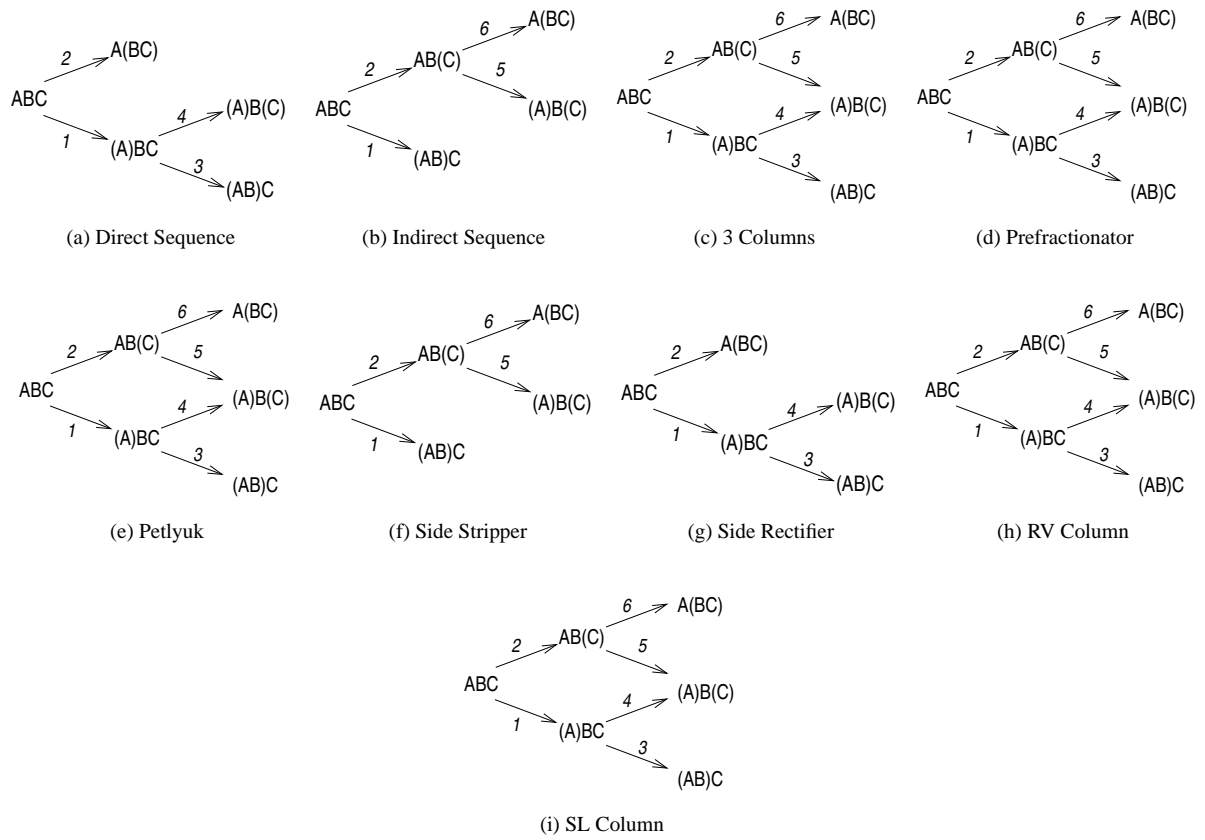


Figure B.2: STN Representations of the GMF Ternary Complex Distillation

Table B.1: GMF M/H Modules and Tasks in Ternary Complex Column Sequencing

M/H	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
1	A/BC	AB/C	A/BC	A/BC	A/BC	AB/C	A/BC	A/BC	A/BC
2	A/BC	AB/C	AB/C	AB/C	AB/C	AB/C	A/BC	AB/C	AB/C
3	AB/C	-	AB/C	AB/C	AB/C	-	AB/C	AB/C	AB/C
4	B/AC	-	B/AC	B/AC	B/AC	-	B/AC	B/AC	B/AC
5	-	B/AC	B/AC	B/AC	B/AC	B/AC	-	B/AC	B/AC
6	-	A/BC	A/BC	A/BC	A/BC	A/BC	-	A/BC	A/BC