

Table 3. Flow Coefficients for Parts Comprising the Kill and Choke Line Geometries

K_{factor}	LANL	LLNL	SNL	Part Definition/Comments
$K_{CS-RAM1}$	0	0	0	Capping Stack Ram #1 – assumed fully open
$K_{CS-RAM2}$	0	NI	NI	Capping Stack Ram #2 – assumed fully closed
$K_{CS-Contract-1}$	0.5	1.2	0.16 ^b	Contraction from capping stack main flow to kill or choke lines
$K_{CS-Contract-2}$	0.2	0.23	0.22	Piping contraction from 4-1/16" to 3-1/16"
K_{KL-V1} and K_{KL-V2}	0	0.15	0.14 ^a	Kill-line gate valve 1 – assumed fully open
$K_{KL-V1&2}$ (effective)	NI	NI	0.14 ^a	Kill-line gate valve 2 – assumed fully open
$K_{KL-ELBOW-1}$	1.0	0.35	1.0 ^a	Cross with two ends capped to create "elbow"
$K_{KL-Piping}$	NI	NI	0.4 ^a	Kill-line piping
$K_{KL-EXP-SEA}$	1.0	1.0	1.0	Pipe open to sea
K_{CL-V1} and K_{CL-V2}	0	0.15	0.14 ^a	Choke-line gate valve 1 – assumed fully open
K_{CL-V1} and K_{CL-V2} (effective)	NI	NI	0.14 ^a	Choke-line gate valve 2 – assumed fully open
$K_{CL-ELBOW-1}$	1.0	0.35	1.0	Cross with two ends capped to create "elbow"
$K_{CL-COLLET-HUB}$	0.85	2.3	0.61	Contraction collet hub (2.53" ID gasket)
$K_{CL-EXP-1}$	0.1	0.126	^c	Expansion section from 3.0625" to 3.63"
$K_{CL-ChokeValve}$	Variable	Variable	Variable	CC40 choke valve – Cv factors given in Figure 8
$K_{CL-Contract-1}$	0.1	NI	^c	Contraction from 3.63" to 3.0625"
$K_{CL-ELBOW-2}$	0.2	0.2	0.5	Long-radius elbow
$K_{CL-EXP-SEA}$	1.0	1.0	1.0	Pipe open to the sea
$K_{CL-Piping}$	NI	NI	1.0 ^a	Choke-line piping

Notes: For LANL, LLNL, SNL modeling: NI in the table means not included in the model. SNL model:
^a These values are nominal. They included some flow dependence, since they were based on the pipe friction factor. ^b This value is based on the higher velocity in the smaller pipe. ^c These losses were assumed to be included in the Cv factor for the choke valve.