

**SVEUČILIŠTE U ZAGREBU**  
**FAKULTET ELEKTROTEHNIKE I RAČUNARSTVA**

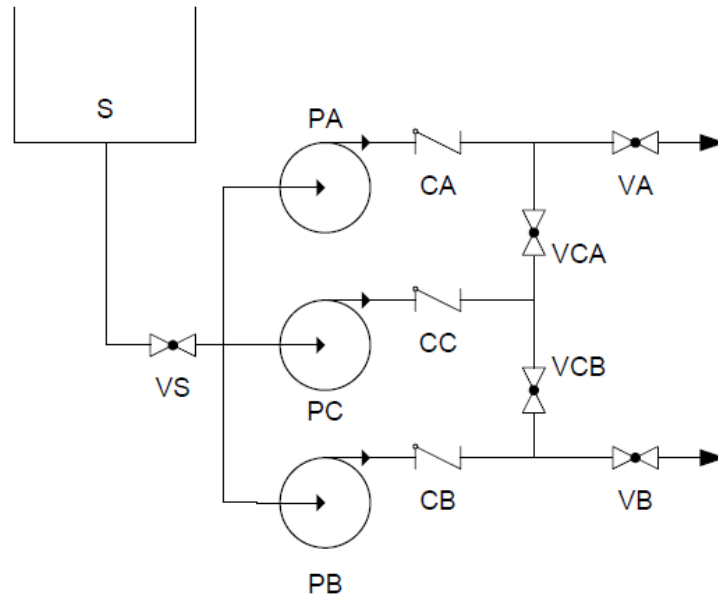
**PROCJENE RIZIKA**  
**2. DOMAĆA ZADAĆA**

Zagreb, studeni 2011.

## Zadatak

EE.2.DZ.2c

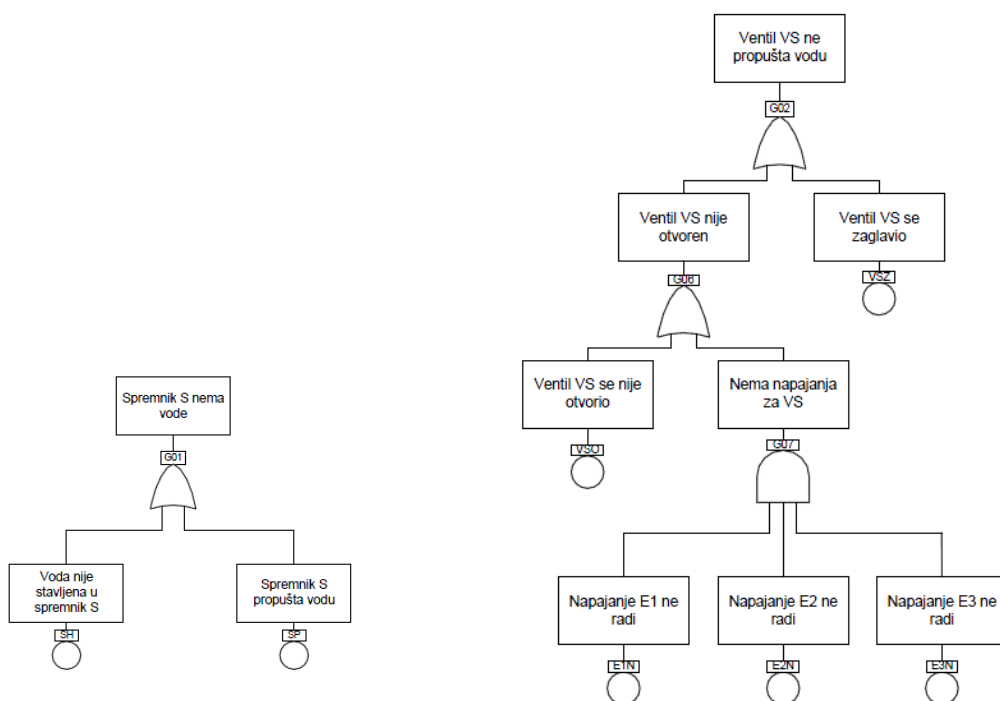
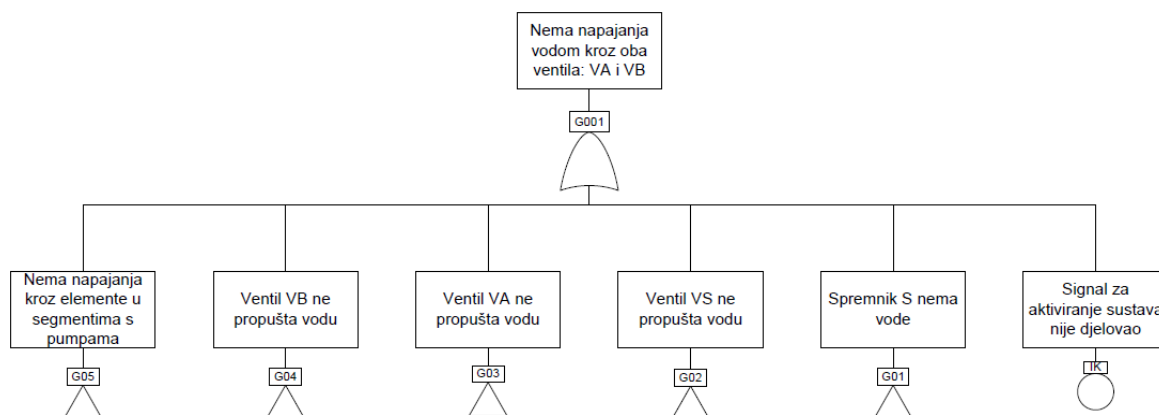
Zadatak je sustava ostvariti napajanje (tekućine) iz spremnika u oba smjera (preko VA i preko VB). Ventile VCA i VCB treba otvarati samo kada za to ima potrebe.

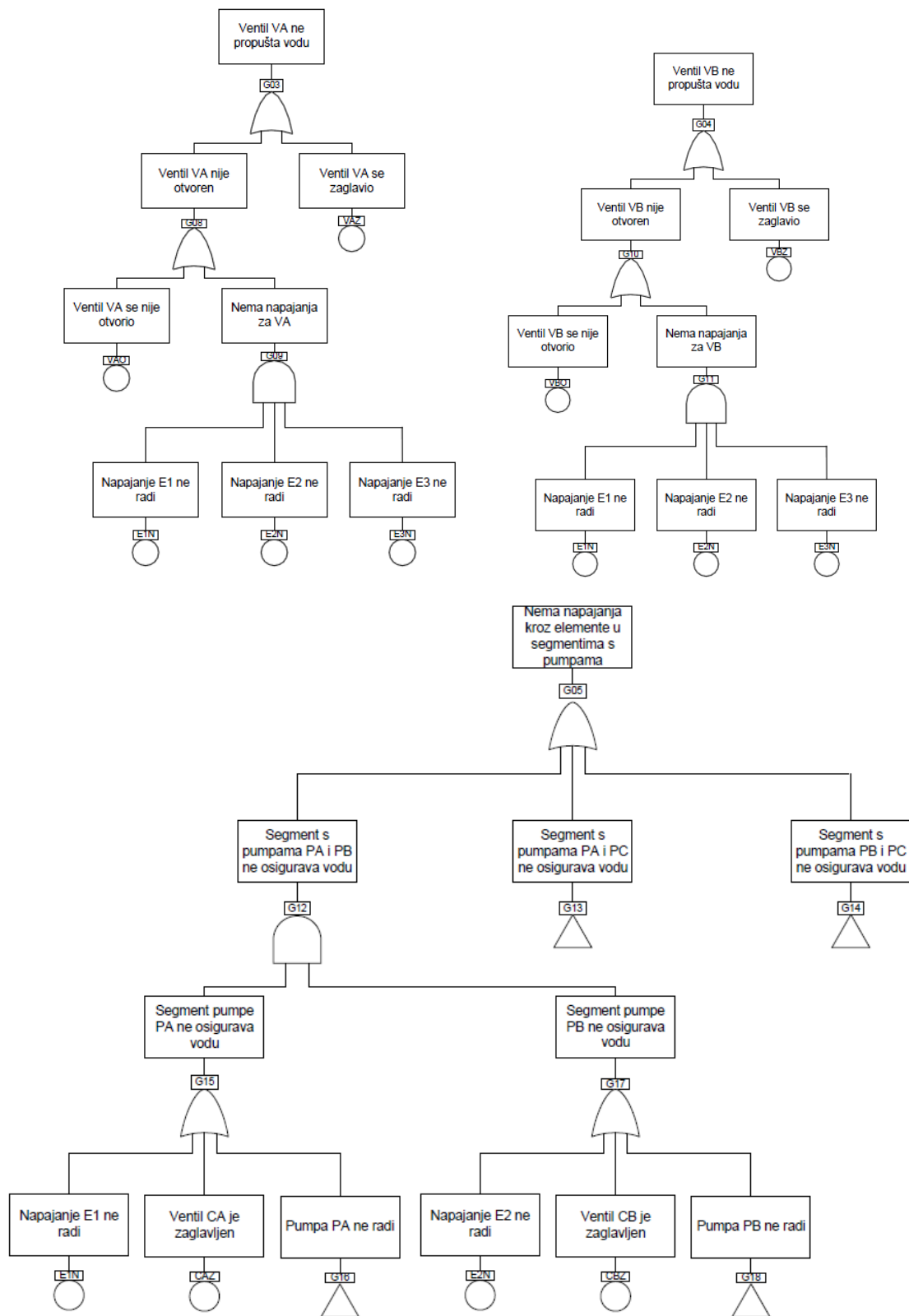


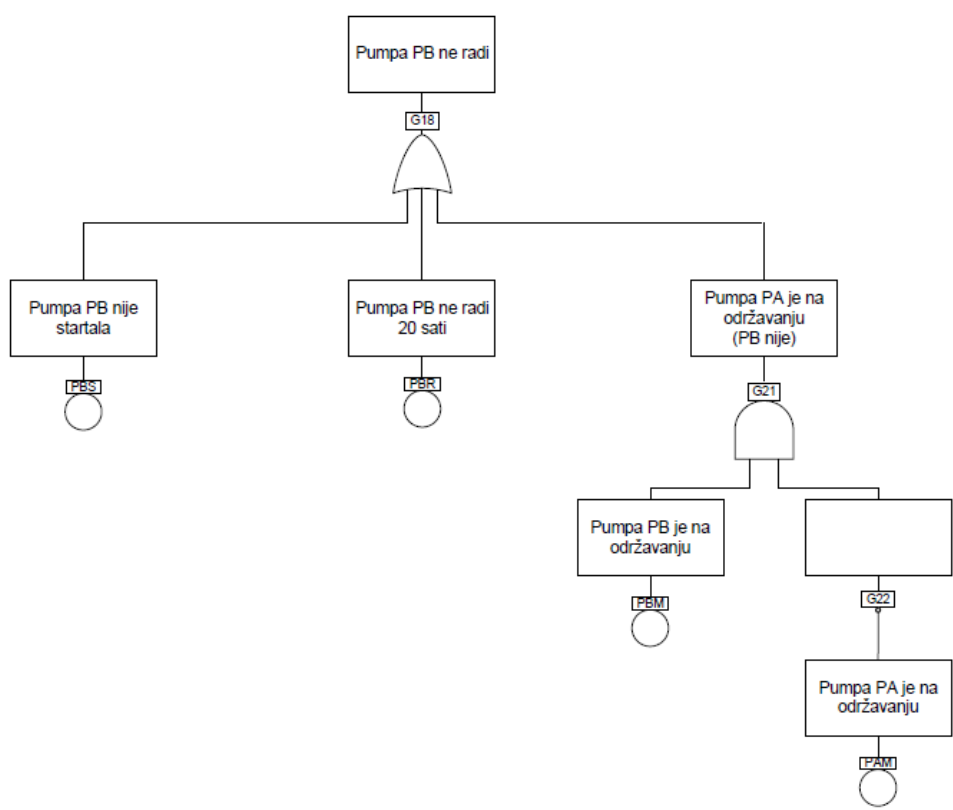
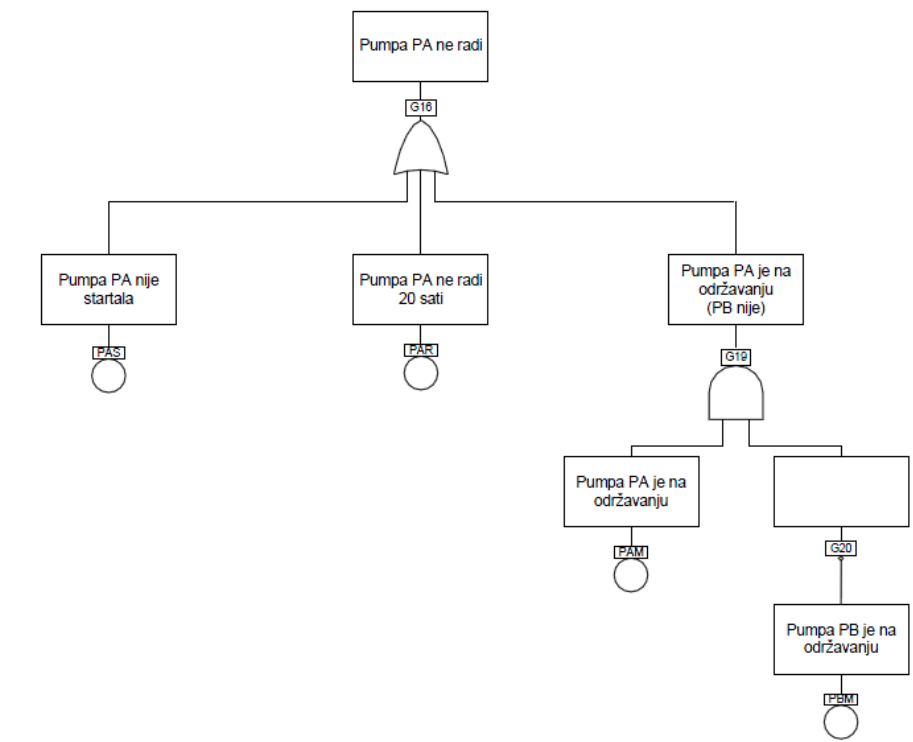
Kriterij uspjeha: potrebna je jedna pumpa za svaki smjer (preko VA i preko VB).

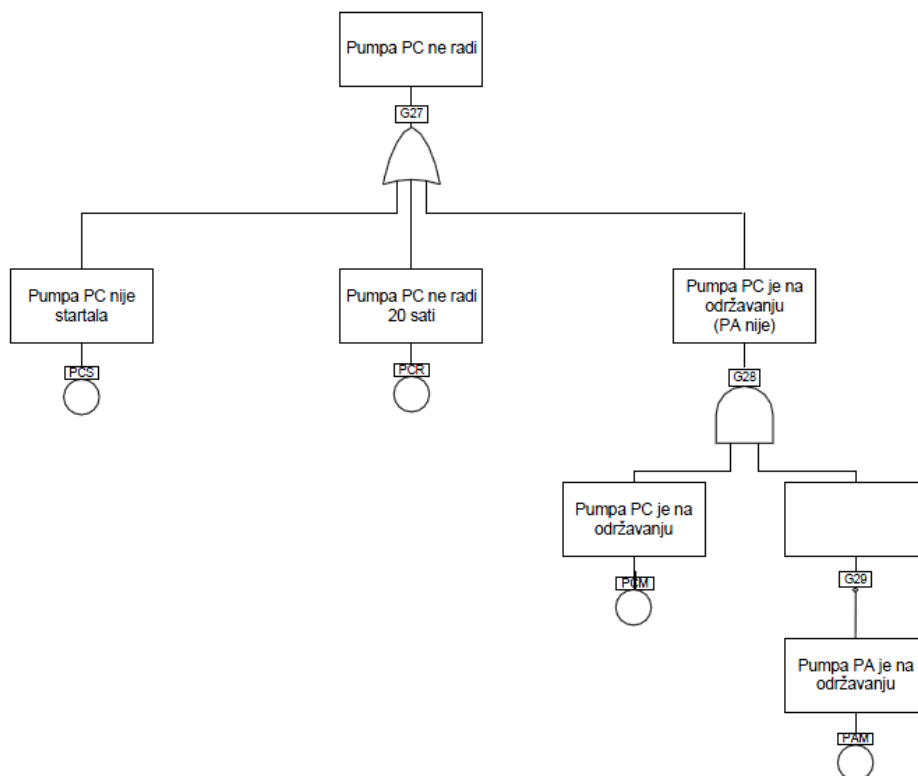
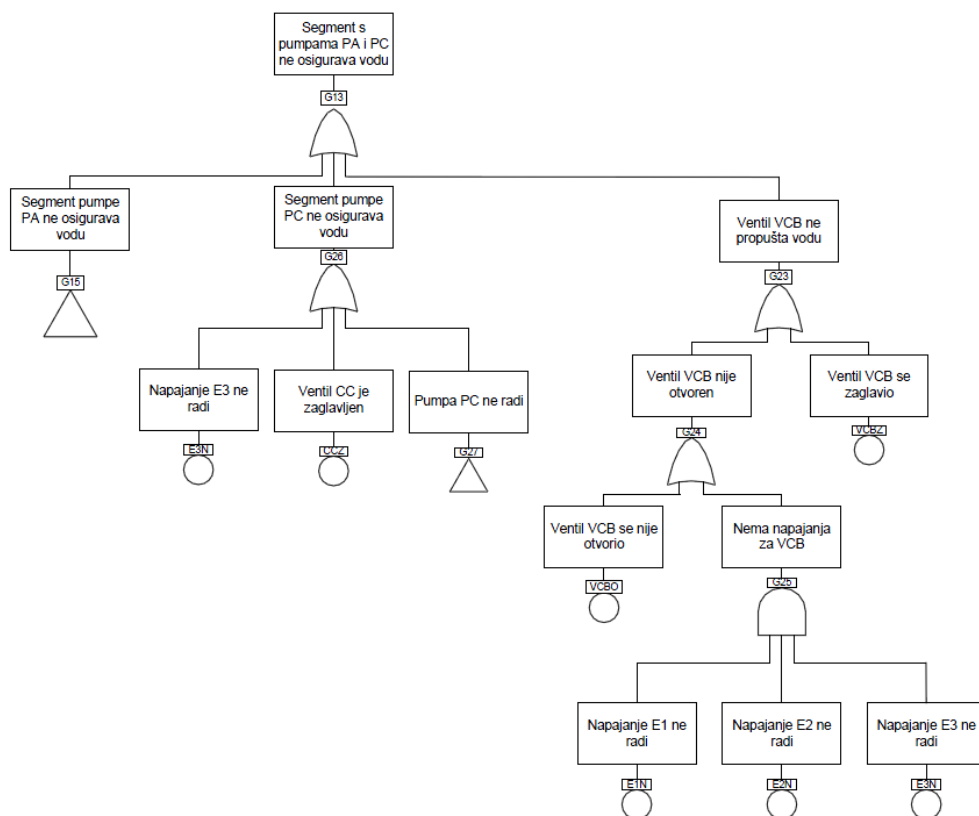
El. en. (pumpe, ventili i instr. i kontr.): svaka grana (A,B i C) ima svoj zasebni izvor. Ventili VS, VCA, VCB, VA i VB se mogu napajati iz sva tri izvora.

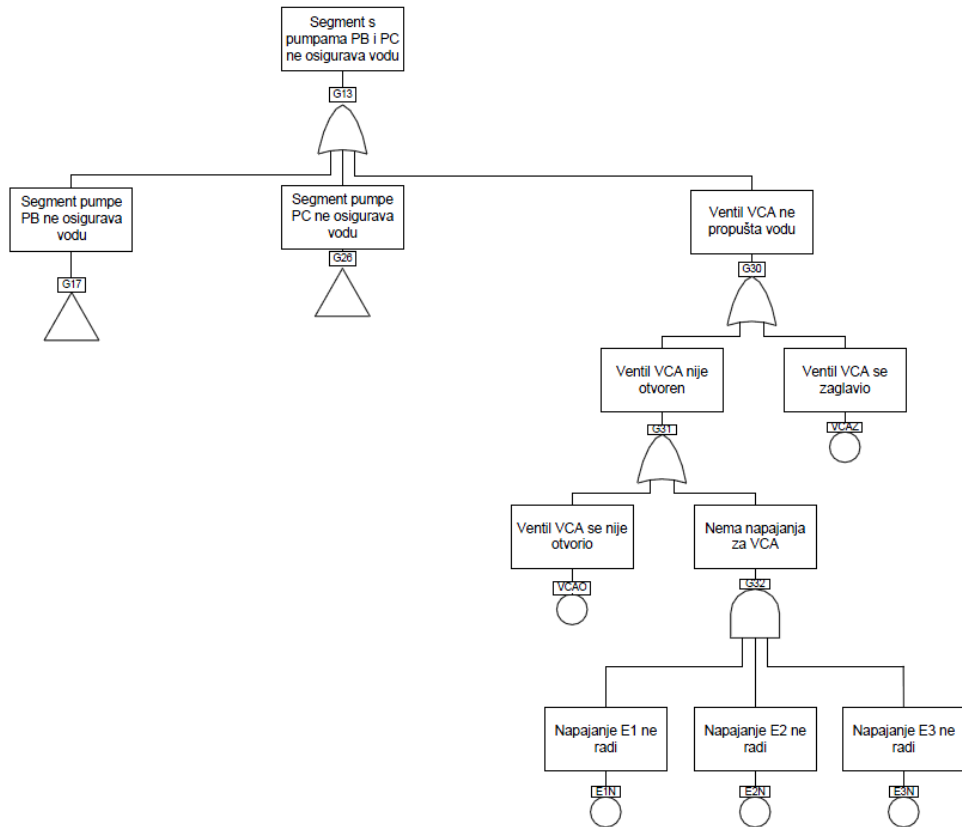
## Rješenje











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$$G001 = IK + G01 + G02 + G03 + G04 + G05$$

$$G01 = SH + SP$$

$$G02 = G06 + VSZ = VSO + E1 \cdot E2 \cdot E3 + VSZ$$

$$G03 = VAZ + E1 \cdot E2 \cdot E3 + VAO$$

$$G04 = VBZ + E1 \cdot E2 \cdot E3 + VBO$$

$$G05 = G12 + G13 + G14$$

$$G12 = G15 \cdot G17$$

$$G13 = G15 + G26 + G23$$

$$G14 = G17 + G26 + G30$$

$$G15 = E1N + CAZ + PAS + PAR + PAM \cdot \overline{PBM}$$

$$G17 = E2N + CBZ + PBS + PBR + PBM \cdot \overline{PAM}$$

$$G23 = VCBZ + VCBO + E1N \cdot E2N \cdot E3N$$

$$G26 = E3N + CC2 + G27 = E3N + CC2 + PCS + PCR + PCM \cdot \overline{PAM}$$

$$G30 = VCAZ + VCAO + E1N \cdot E2N \cdot E3N$$

$$\begin{aligned}
G001 &= IK + SH + SP + VSO + E1*E2*E3 + VSZ + VAZ + VAO + VBZ + VBO + G15*G17 + G15 \\
&\quad + G26 + G23 + G17 + G26 + G30 = \\
&= IK + SH + SP + VSO + E1*E2*E3 + VSZ + VAZ + VAO + VBZ + VBO + G15 + G17 + G23 + \\
&\quad G26 + G30 = \\
&= IK + SH + SP + VSO + E1*E2*E3 + VSZ + VAZ + VAO + VBZ + VBO + E1N + CAZ + PAS + \\
&PAR + PAM* \overline{PBM} + E2N + CBZ + PBS + PBR + PBM* \overline{PAM} + VCBZ + VCBO + E3N + CC2 + \\
&\quad PCS + PCR + PCM* \overline{PAM} + VCAZ + VCAO = \\
&0.0005 + 0.005 + 0.005 + 0.005 + 0.005*0.005*0.005 + 0.005 + 0.005 + 0.005 + 0.005 + 0.005 + \\
&0.001 + 0.001 + 0.01 + 0.005*(1-0.005) + 0.005 + 0.001 + 0.001 + 0.01 + 0.005*(1-0.005) + 0.005 + \\
&0.001 + 0.001 + 0.01 + 0.005*(1-0.005) + 0.005 + 0.005 + 0.005 + 0.005 = \mathbf{0.0854}
\end{aligned}$$

IK	0.005	PBS	0.001
SH	0.005	PBR	0.01
SP	0.005	$PBM* \overline{PAM}$	$4.975 * 10^{-3}$
VSO	0.005	VCBZ	0.005
$E1*E2*E3$	$1.25 * 10^{-7}$	VCBO	0.005
VSZ	0.005	E3N	0.005
VAZ	0.005	CC2	0.001
VAO	0.005	PCS	0.001
VBZ	0.005	PCR	0.01
VBO	0.005	$PCM* \overline{PAM}$	$4.975 * 10^{-3}$
E1N	0.005	VCAZ	0.005
CAZ	0.001	VCAO	0.005
PAS	0.001		
PAR	0.01		
$PAM* \overline{PBM}$	$4.975 * 10^{-3}$		
E2N	0.005		
CBZ	0.001		

Ukupna vjerojatnost iznosi **0.0854**.