$$\frac{\tau \in [\![\mathcal{P}]\!], t_{max} \geq \max(\tau), \quad N_V \in \mathsf{Nonce}_V}{\tau \cdot (t_{max}, \mathrm{send}_V(h(N_V))) \in [\![\mathcal{P}]\!]}\ \mathtt{V1}$$

$$\frac{\tau \in [\![\mathcal{P}]\!], t_{max} \geq \max(\tau), \quad (t_1, \mathrm{recv}_P(h(N_V))) \in \tau, N_P \in \mathsf{Nonce}_P}{\tau \cdot (t_{max}, \mathrm{send}_P(N_P)) \in [\![\mathcal{P}]\!]}\ \mathtt{P1}$$

$$\frac{\tau \in [\![\mathcal{P}]\!], t_{max} \geq \max(\tau), (t_1, \mathrm{send}_V(h(N_V))) \in \tau, \quad (t_2, \mathrm{recv}_V(N_P)) \in \tau}{\tau \cdot (t_{max}, \mathrm{send}_V(h(N_V, N_P))) \in [\![\mathcal{P}]\!]}\ \mathtt{V2}$$

$$\frac{\tau \in [\![\mathcal{P}]\!], t_{max} \geq \max(\tau), (t_1, \mathrm{recv}_P(h(N_V))) \in \tau, \quad (t_2, \mathrm{send}_P(N_P)) \in \tau, (t_3, \mathrm{recv}_P(h(N_V, N_P))) \in \tau}{\tau \cdot (t_{max}, \mathrm{send}_P(MAC(MAC(N_V, N_P), MeM))) \in [\![\mathcal{P}]\!]}\ \mathtt{P2}$$

$$\frac{\tau \in [\![\mathcal{P}]\!], t_{max} \geq \max(\tau), (t_1, \mathrm{send}_V(h(N_V))) \in \tau, \quad (t_2, \mathrm{recv}_V(N_P)) \in \tau, (t_3, \mathrm{send}_V(h(N_V, N_P))) \in \tau, \quad (t_4, \mathrm{recv}_V(MAC(MAC(N_V, N_P), MeM))) \in \tau}{\tau \cdot (t_{max}, \mathrm{claim}_V(erasure, P, MeM)) \in [\![\mathcal{P}]\!]}\ \mathtt{V3}$$