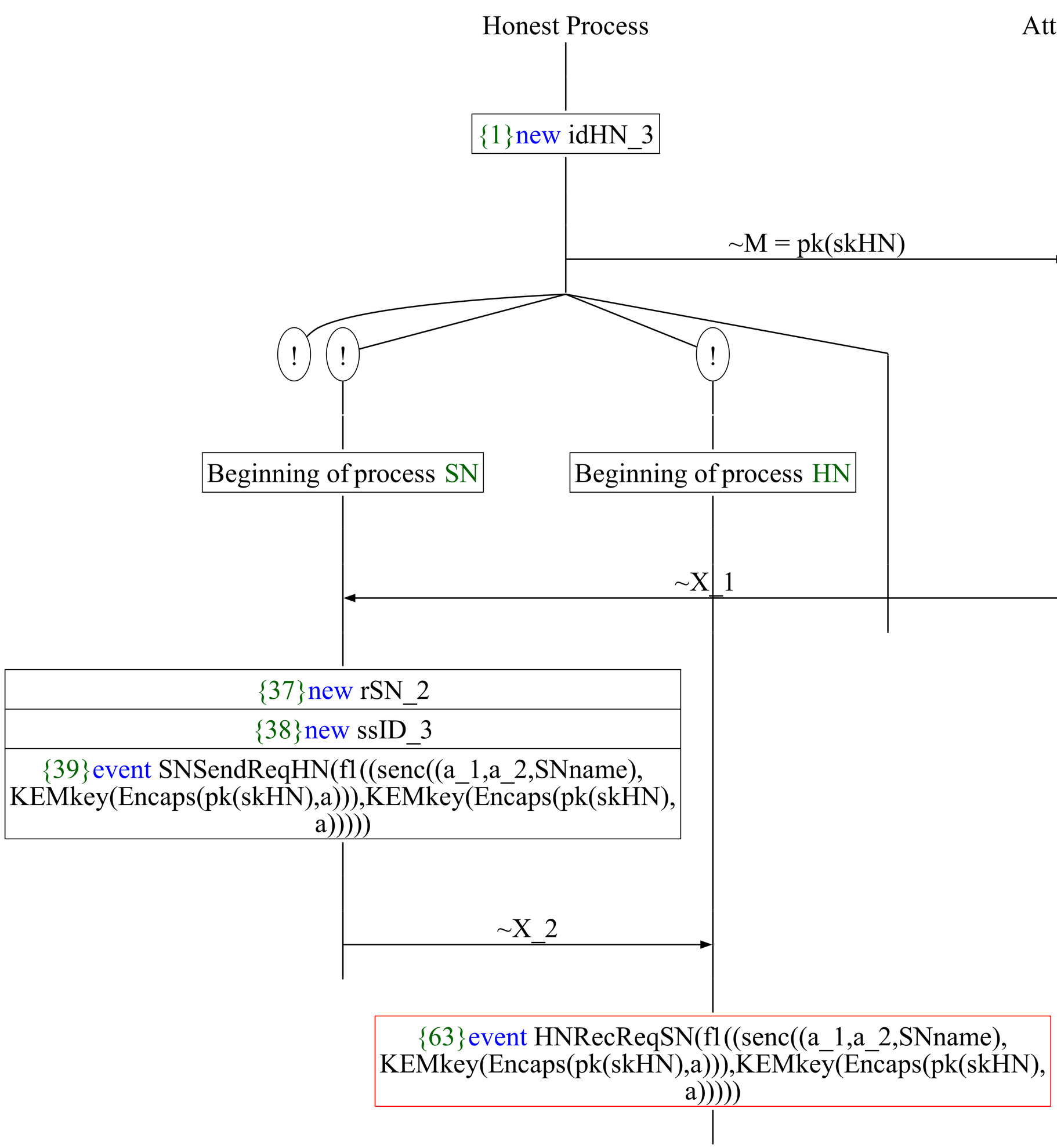
A trace has been found.

Abbreviations
~X_1 = (KEMCipher(Encaps(~M,a)),senc((a_1,a_2,SNname), KEMkey(Encaps(~M,a))),f1((senc((a_1,a_2,SNname), KEMkey(Encaps(~M,a))),KEMkey(Encaps(~M,a)))),a_3) = (KEMCipher(Encaps(pk(skHN),a)),senc((a_1,a_2, SNname),KEMkey(Encaps(pk(skHN),a))),f1((senc((a_1,a_2,SNname),KEMkey(Encaps(pk(skHN),a))),KEMkey(Encaps(pk(skHN),a)))),a_3)
~X_2 = (ssID_3,KEMCipher(Encaps(pk(skHN),a)),senc((a_1, a_2,SNname),KEMkey(Encaps(pk(skHN),a))),f1((senc((a_1,a_2,SNname),KEMkey(Encaps(pk(skHN),a))),KEMkey(Encaps(pk(skHN),a)))),SNname,rSN_2)