~M\_5 = choice[aenc((groupkey\_request,nonce\_21, sign(groupkey\_request,vsk\_9),cert(vid\_21,pk(vsk\_9), cask\_4)),pk(cask\_4)),aenc((groupkey\_request,nonce\_23, sign(groupkey\_request,vsk\_11),cert(vid\_23,pk(vsk\_11), cask\_5)),pk(cask\_5))] ~M\_7 = choice[aenc((groupkey\_request,nonce\_20, sign(groupkey\_request,vsk\_8),cert(vid\_20,pk(vsk\_8), cask\_4)),pk(cask\_4)),aenc((groupkey\_request,nonce\_22, sign(groupkey\_request,vsk\_10),cert(vid\_22,pk(vsk\_10), cask\_5)),pk(cask\_5))] A trace has been found. ~M\_8 = choice[aenc(((groupkey response,nonce\_21, vid\_21,gsk(vid\_21,gmsk\_4),gpk(gmsk\_4)),sign((groupkey response, nonce\_21,vid\_21,gsk(vid\_21,gmsk\_4),gpk(gmsk\_4)), cask\_4)),pk(vsk\_9)),aenc(((groupkey\_response,nonce\_23, vid\_23,gsk(vid\_23,gmsk\_5)),sign((groupkey\_response, nonce\_23,vid\_23,gsk(vid\_23,gmsk\_5)),gpk(gmsk\_5)), cask\_5)),pk(vsk\_11))] **Honest Process** Attacker {1}new gmsk\_4 {2}new cask\_4 {3}new vid\_20  $\{4\}$  new vsk\_8 {5}new nonce\_20 {6}new vid\_21 {7}new vsk\_9 {8}new nonce\_21 {9}new attvid\_4 {10} new attsk\_4 {11}new gmsk\_5 {12}new cask\_5 {13}new vid\_22 {14}new vsk\_10 {15} new nonce\_22 {16} new vid\_23 {17} new vsk\_11 {18} new nonce\_23 {19} new attvid\_5 {20} new attsk\_5  $\sim$ M = pk(choice[cask 4,cask 5]) {489}event choice[AttackerGetsEnrollmentCertificate(attvid\_4,pk(attsk\_4)),AttackerGetsEnrollmentCertificate(attvid\_5,pk(attsk\_5))] {494}event WaitingRequest  $+X_1$  $\sim$ M\_4 = choice[cert(vid\_21,pk(vsk\_9),cask\_4),cert(vid\_23,pk(vsk\_11),cask\_5)] [261] event ValidGroupKeyRequestSent(choice[vid\_21, vid\_23]) ~M 5  $\sim$  M\_6 = choice[cert(vid\_20,pk(vsk\_8),cask\_4),cert(vid\_22,pk(vsk\_10),cask\_5)] {30} event ValidGroupKeyRequestSent(choice[vid\_20, vid\_22]) ~M 7 ~M 5 {507}event GroupKeyRequestReceived(choice[aenc(groupkey\_request,nonce\_21,sign(groupkey\_request,vsk\_9),cert(vid\_21,pk(vsk\_9),cask\_4)),pk(cask\_4)), aenc((groupkey\_request,nonce\_23,sign(groupkey\_request,vsk\_11),cert(vid\_23,pk(vsk\_11),cask\_5)),pk(cask\_5))]) {537}get v\_234: table suchthat (if choice[true, false] then (success?(1-proj-revokedcerts(v\_234)) && (choice[vid\_21,caught-fail] = nf 1-proj-revokedcerts(v\_234))) else (success?(1-proj-revokedcerts(v\_234)) && (choice[caught-fail,vid\_23] = nf 1-proj-revokedcerts( v\_234)))): else branch taken {522} event choice[ValidGroupKeyRequestReceived( cask\_4,vid\_21),ValidGroupKeyRequestReceived(cask\_5, vid\_23)] {527} event choice[ValidGroupPrivateKeySent(vid 21, gsk(vid\_21,gmsk\_4),gpk(gmsk\_4)),ValidGroupPrivateKeyŚent(vid\_23,gsk(vid\_23,gmsk\_5),gpk(gmsk\_5))] ~M 8 ~M 8 {270}new vpseudosk\_20 {271}new nonce 24 {272}new vpseudosk 21 {273}new m\_32 {274}new nonce\_25 {295}if choice[true,false]
This process performs a test that may succeed on one side and not on the other.

Abbreviations

 $\sim$ X\_1 = ( $\sim$ M\_1, $\sim$ M\_2, $\sim$ M\_3) = choice[(attvid\_4,attsk\_4,cert(attvid\_4,pk(attsk\_4),cask\_4)),(attvid\_5,attsk\_5,cert(attvid\_5,pk(attsk\_5),cask\_5))]