```
not_delivered_before_somewhere  THM

⊢  ∀E:EventStruct, a,b:|E|, tr:|E| List.
|  ¬a somewhere delivered before b
|  ⟺
|  (∀k:ℕ||tr||.
|   a delivered at time k ⇒
|   (∃k':ℕ||tr||.
|    k'<k & b delivered at time k' & loc(E)(tr[k']) = loc(E)(tr[k])))
| by Auto
|
|\
| 1. E : EventStruct
| 2. a : |E|
| 3. b : |E|
| 4. tr : |E| List
| 5. ¬a somewhere delivered before b
| 6. k : ℕ||tr||
| 7. a delivered at time k
| ⊢  ∃k':ℕ||tr||.
|    k'<k & b delivered at time k' & loc(E)(tr[k']) = loc(E)(tr[k])
|   by ...
|
|      ...
| THEN InstConcl [k] THEN Auto
|
|      THEN SupposeNot THEN D (-5) THEN InstConcl [k'] THEN Auto
|
.\
. 1. E : EventStruct
. 2. a : |E|
. 3. b : |E|
. 4. tr : |E| List
. 5. ∀k:ℕ||tr||.
.    a delivered at time k ⇒
.    (∃k':ℕ||tr||.
.     k'<k & b delivered at time k' & loc(E)(tr[k']) = loc(E)(tr[k]))
. ⊢  ¬a somewhere delivered before b
.   by D 0 THENA Auto THEN Unfold `delivered_before_somewhere` (-1)
.
.      THEN ExRepD THEN InstHyp [k] (-4) THENA Auto THEN ExRepD
.
.      THEN InstHyp [k'] (-5) THEN Auto'
END
```