

CONTEXT ClockDeep
SETS Ev
CONSTANTS clock, tick_min, tick_hour, tick_midnight, init
AXIOMS

axm1: $partition(Ev, \{init\}, \{tick_midnight\}, \{tick_hour\}, \{tick_min\})$
axm2: $clock \in Machine(\mathbb{Z} \times \mathbb{Z}, Ev)$
axm3: $Event(clock) = Ev$
axm4: $State(clock) = \mathbb{Z} \times \mathbb{Z}$
axm5: $Init(clock) = init$
axm6: $Progress(clock) = \{tick_midnight, tick_hour, tick_min\}$
axm7: $AP(clock) = \{m \mapsto h \mid m = 0 \wedge h = 0\}$
axm8: $Grd(clock) = \{t \mapsto (m \mapsto h) \mid ($
 $(t = tick_min \wedge m < 59) \vee$
 $(t = tick_hour \wedge m = 59 \wedge h < 23) \vee$
 $(t = tick_midnight \wedge m = 59 \wedge h = 23))\}$
axm9: $BAP(clock) = \{t \mapsto ((m \mapsto h) \mapsto (mp \mapsto hp)) \mid ($
 $(t = tick_min \wedge mp = m + 1 \wedge hp = h) \vee$
 $(t = tick_hour \wedge mp = 0 \wedge hp = h + 1) \vee$
 $(t = tick_midnight \wedge mp = 0 \wedge hp = 0))\}$
axm10: $Inv(clock) = \{m \mapsto h \mid m \in \mathbb{N} \wedge h \in \mathbb{N} \wedge m < 60 \wedge h < 24\}$
axm11: $Thm(clock) = \{m \mapsto h \mid$
 $m < 59 \vee (m = 59 \wedge h < 23) \vee (m = 59 \wedge h = 23)\}$
axm12: $Variante(clock) = \{m \mapsto h \mapsto v \mid$
 $v = 24 * 60 - 1 - (m + h * 60)\}$
axm13: $Ordinary(clock) = \{init, tick_midnight\}$
axm14: $Convergent(clock) = \{tick_min, tick_hour\}$

THEOREMS
thm1: $check_Machine_Consistency(clock)$

END