*BOUNDARY_AMBIENT

Purpose: This command defines ALE "ambient" type element formulations (see Remarks 1, 2 and 5).

Card 1	1	2	3	4	5	6	7	8
Variable	SETID	MMG	AMBTYP					
Type	I	I	I					
Default	none	none	none					

Optional Card. Additional optional card for AMBTYP = 4 with curves.

Card 1	1	2	3	4	5	6	7	8
Variable	LCID1	LCID2						
Type	I	I						
Default	Rem 1	Rem 1						

VARIABLE	DESCRIPTION
SETID	The ambient element set ID for which the thermodynamic state is being defined. The element set can be *SET_SOLID for a 3D ALE model, *SET_SHELL for a 2D ALE model or *SET_BEAM for a 1D ALE model.
MMG	ALE multi-material group ID.
AMBTYP	Ambient element type: EQ.4: Pressure inflow/outflow (see Remarks 1 and 2) EQ.5: Receptor for blast load (See *LOAD_BLAST_ENHANCED)
LCID1	A load curve ID for internal energy per unit reference volume (see Remark 4 and the *EOS section for details). If *EOS_IDEAL_GAS is being used, this ID refers to a temperature load curve ID.
LCID2	Load curve ID for relative volume, $v_r = (v/v_0 = \rho_0/\rho)$. (See Remark 3 and the *EOS section for details).

Remarks:

1. **Ambient Elements.** The term "ambient" refers to a medium that has predetermined thermodynamic state throughout the simulation. All "ambient" elements will have its thermodynamic state reset back to this predetermined state every cycle. If this state is defined using the *EOS card, then this predetermined thermodynamic state is constant throughout the simulation. If it is defined with the load curves of Card 2 for AMBTYP = 4, its thermodynamic state will vary according to these defined load curves. "Ambient" elements are sometimes also referred to as "reservoir" elements as they may be used to simulate semi-infinite region.

2. **Thermodynamic State.** In general, a thermodynamic state of a non-reacting and no-phase-change material may be defined by 2 thermodynamic variables. By defining (a) an internal energy per unit reference volume load curve (or a temperature load curve if using *EOS_IDEAL_GAS) and (b) a relative volume load curve, the pressure as a function of time for this ambient part ID can be computed directly using the equation of state (*EOS_…).

3. **Reference Specific Volume.** A reference specific volume, $v_0 = 1/\rho_0$, is the inverse of a reference density, ρ_0. The reference density is defined as the density at which the material is under a reference or nominal state. Refer to the *EOS section for a more complete explanation.

4. **Internal Energy.** The internal energy per unit reference volume may be defined as

$$e_{\text{ipv0}} = \frac{C_v T}{v_0} \ .$$

   The specific internal energy (or internal energy per unit mass) is defined as $C_v T$.

5. **Related Cards.** This card does not require AET to be defined under *SECTION_SOLID or SECTION_ALE2D or SECTION_ALE1D card.