

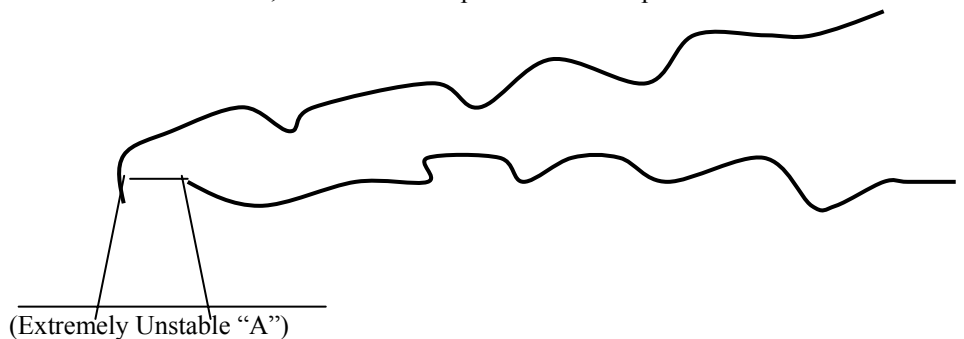
Description of Weather Stability Categories From [emd.wa.gov/3-map/a-p/iffrcp/apx-06-atmos-stab-cat.doc](http://emd.wa.gov/3-map/a-p/iffrcp/apx-06-atmos-stab-cat.doc)

“These Atmospheric Stability Categories are used on the Emergency Management Division EOC Weather Charts, Energy Northwest Classification Notification Form (CNF), United States Department of Energy Hanford Site Notification Form, Naval Nuclear Propulsion Program Event Classification / Notification Form, and the Umatilla Chemical Depot (UMCD) Notification Form. These category listings are not used by the Trojan Nuclear Facility.

<u>Classification</u>	<u>Pasquill Stability Category</u>
Extremely Unstable	A
Moderately Unstable	B
Slightly Unstable	C
Neutral	D
Slightly Stable	E
Moderately Stable	F
Extremely Stable	G

I. Pasquill Stability Classes General Descriptions and Definitions:

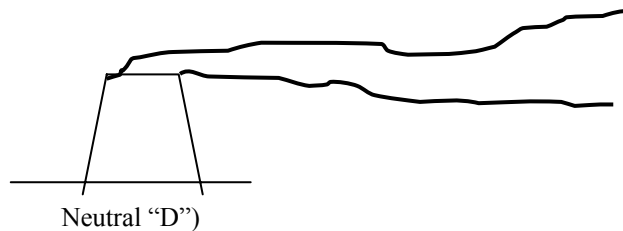
**Extremely Unstable “A”** Weather conditions are very unpredictable. Wind speed average 1 meter/second but is “gusty”. The temperature rapidly decreases with altitude. This condition is called superadiabatic. It is common on a hot sunny day. Due to these conditions, a contamination plume would loop and be unpredictable.



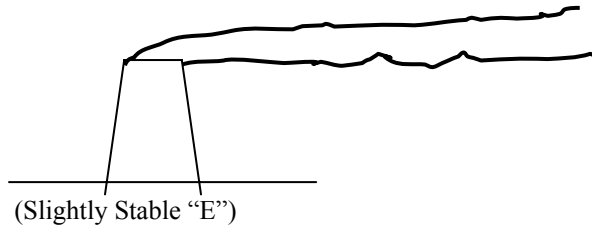
**Moderately Unstable “B”** Weather conditions are still unpredictable, but less so than “A”. Wind speeds average 2 meter/second, and is not gusty. The temperature still decreases, but not as rapidly, with altitude. Looping of a plume would still occur, but is not as severe. This condition is common on a sunny warm day.

**Slightly Unstable “C”** Weather conditions are somewhat unpredictable. Wind speeds average 5 meters/second. A little gustiness may be expected. The temperature still decreases and looping of a contamination plume may occur, but progressively less pronounced than “A” or “B” categories. This is an average day, slightly cloudy.

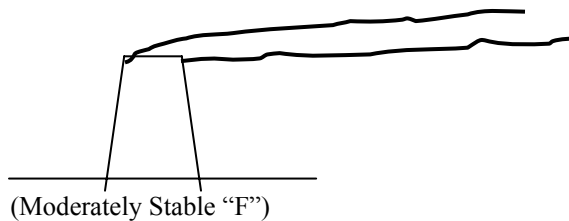
**Neutral “D”** Weather conditions are more predictable. Wind speeds average 5 meters/second, with no expected gustiness. The temperature still decreases with altitude, but the change is less pronounced. At this point, the condition name changes from “superadiabatic” to “adiabatic”. A contamination plume is more predictable, with minor looping. This condition is common on an overcast day or night (heavy overcast)



**Slightly Stable “E”** Weather conditions turn more predictable than with “D”. Wind speeds average 3 meters/second. The temperature does not change with altitude. This condition is called “isothermic”. A contamination plume is easy to predict with this condition. “Coning” of the plume occurs. This condition generally occurs at night, and is considered an average night (partly cloudy).



**Moderately Stable “F”** Weather conditions become very predictable. Wind speeds average 2 meters/second. This is an inversion. Temperatures increase with altitude. This condition is opposite of a Category “A”. With this condition, little vertical dispersion occurs, i.e. it doesn’t reach the ground rapidly.



**Extremely Stable “G”** This condition is very predictable, but rarely occurs. No winds blow and the temperature increases rapidly with altitude. This condition may occur over a city, which acts even less pronounced than an “F” condition.

II. Notes from DSHS, ORP, A>W. Conklin on further clarification of Atmospheric Stability Categories.

A. It should be noted that the above conditions are GENERALITIES. Stability classes change several times per day as wind speeds change and as sun and cloud cover change.

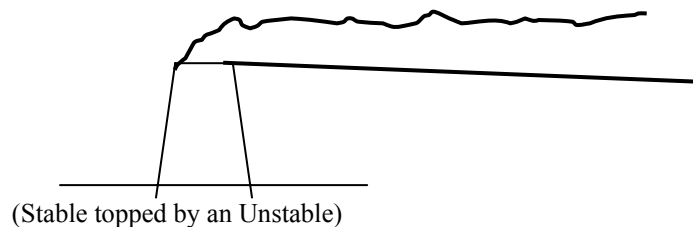
“A”, “B”, and “C” are most common during the day.

“D”, “E”, and “F” are most common at night.

“G” is at night, but very rare.

B. Stability classes also change with altitude, with day and night changes.

1. Inversions (stable) can occur at low altitudes, and can be topped by an unstable class. When this occurs “Lofting” of a plume occurs, i.e., the contamination is carried higher into the atmosphere.



2. Or the opposite can occur. Closer to the ground it can be unstable, while an inversion can exist at higher altitudes. When this occurs, fumigation occurs, i.e., plume rapidly disperses to the ground.

