THE ENSTROM HELICOPTER CORPORATION
2209 22nd STREET, MENOMINEE, MICHIGAN 49858

SERVICE INFORMATION LETTER

DATE: April 28, 2009

1. SUBJECT: Identifying Corrosion Severity Zone for Operating Environment

2. MODEL: F28A, 280, F28C, 280C, F28F, 280F, and 280FX Helicopters

3. EFFECTIVITY: All

4. REFERENCE: Enstrom Service Information Letter No. 0127 and No. 0129
Enstrom F28F and 280F Series Maintenance Manual, Latest Revision
FAA Advisory Circular, AC43-4, Corrosion Control for Aircraft

5. BACKGROUND:

Enstrom has received two reports of fielded aircraft recently with partial bond separation in the trailing edge structure of the main rotor blades. All of these blades were on aircraft used in coastal regions.

While the majority of the bond separation occurred in the tip region of the blade, it was also observed between the trim tabs and inboard root section as well. All debonding was easily detected by visual inspection of the trailing edge bond line and confirmed via coin tap. In some areas along the trailing edge, the film adhesive was separated from both the upper and lower blade skins. There were obvious signs of corrosion detected in the open portions of the debonded areas.

Several factors may lead to bond line separation and corrosion of the blades. During operational service, the polyurethane top coat applied to the blade may gradually wear away due to erosion from airborne particulate matter or precipitation. Special care should be taken to prevent nicking or chipping of the paint in the bond lines. Also, operation of the main rotor blades in wet or high humidity environments can also significantly accelerate bond line separation and the onset of corrosion through moisture intrusion into the blade. Improper storage of the blades for extended periods of time can foster corrosion.

Once the upper or lower blade skins separate from the film adhesive in the trailing edge, upward forces influencing peeling stresses may cause the bond separation to grow significantly. Similar growth may result in skin to spar bond line separation if proper preventative measures are not followed.

Enstrom Service Information Letters No. 0127 and No. 0129 and the Enstrom F28F and 280F Series Maintenance Manual define preventative maintenance measures, inspection criteria and damage limits, and preservation and storage techniques for aircraft operating over salt water and coastal regions, in tropical or subtropical high humidity regions, and in arid, moderate, and cold regions. The recommendations provided apply to both the main and tail rotor blades.

This Service Information Letter (SIL) serves to identify these environmental operating zones in relation to corrosion severity. Operators should refer to Enstrom service data and FAA Advisory Circular AC43-4, as well as other industry publications, for specific and general instructions for corrosion control.

6. CORROSION SEVERITY ZONE IDENTIFICATION:

NOTE

In order to preclude corrosion damage to the main and tail rotor blades, Enstrom recommends operators follow the procedures outlined in Enstrom Service Information Letters No. 0127 and No. 0129, and the F28F/280F Series Maintenance Manual, paragraphs (4-5), (4-6), (4-7).

Refer to Table 1 and Figures 1 through 6 of this Service Information Letter to identify the applicable corrosion severity zone for the operating aircraft.

Aircraft based in or near heavy industrial and/or metropolitan areas with heavy atmospheric pollution should follow the procedures recommended for Salt Water or Coastal Regions (i.e. Severe Corrosion Zones).

Agricultural operations are considered severely corrosive and should be inspected, washed, and waxed at increased frequency according to Enstrom Service Information Letter No. 0127 and the F28F/280F Series Maintenance Manual, page MM-4-31, item (A) and page MM-4-32, item (E). In this operation, Enstrom recommends following the guidelines set forth for the Salt Water or Coastal Regions (i.e. Severe Corrosion Zones).

NOTE

The Corrosion Severity Zones identified in Figures 1 through 6 are provided for reference purposes only. Local variations may apply. It is the responsibility of the owner and operator to determine specific corrosion severity level with respect to the operating environment of the aircraft based on the description provided in Table 1 and known environmental conditions.

Table 1. Corrosion Severity Zone by Description

Environmental/Operational Description[1]	Corrosion Severity Zone[2]
Arid, Moderate, and Cold Regions	Mild
Tropical or Subtropical High Humidity Regions	Moderate
Salt Water or Coastal Regions	Severe
Aircraft in agricultural operations	
Aircraft operating in or near heavy industrial and/or metropolitan areas with heavy atmospheric pollution	

[1] Description per Enstrom Service Information Letters No. 0127 and No. 0129 and the F28F/280F Series Maintenance Manual
[2] Definition in accordance with FAA Advisory Circular, AC43-4, Corrosion Control for Aircraft

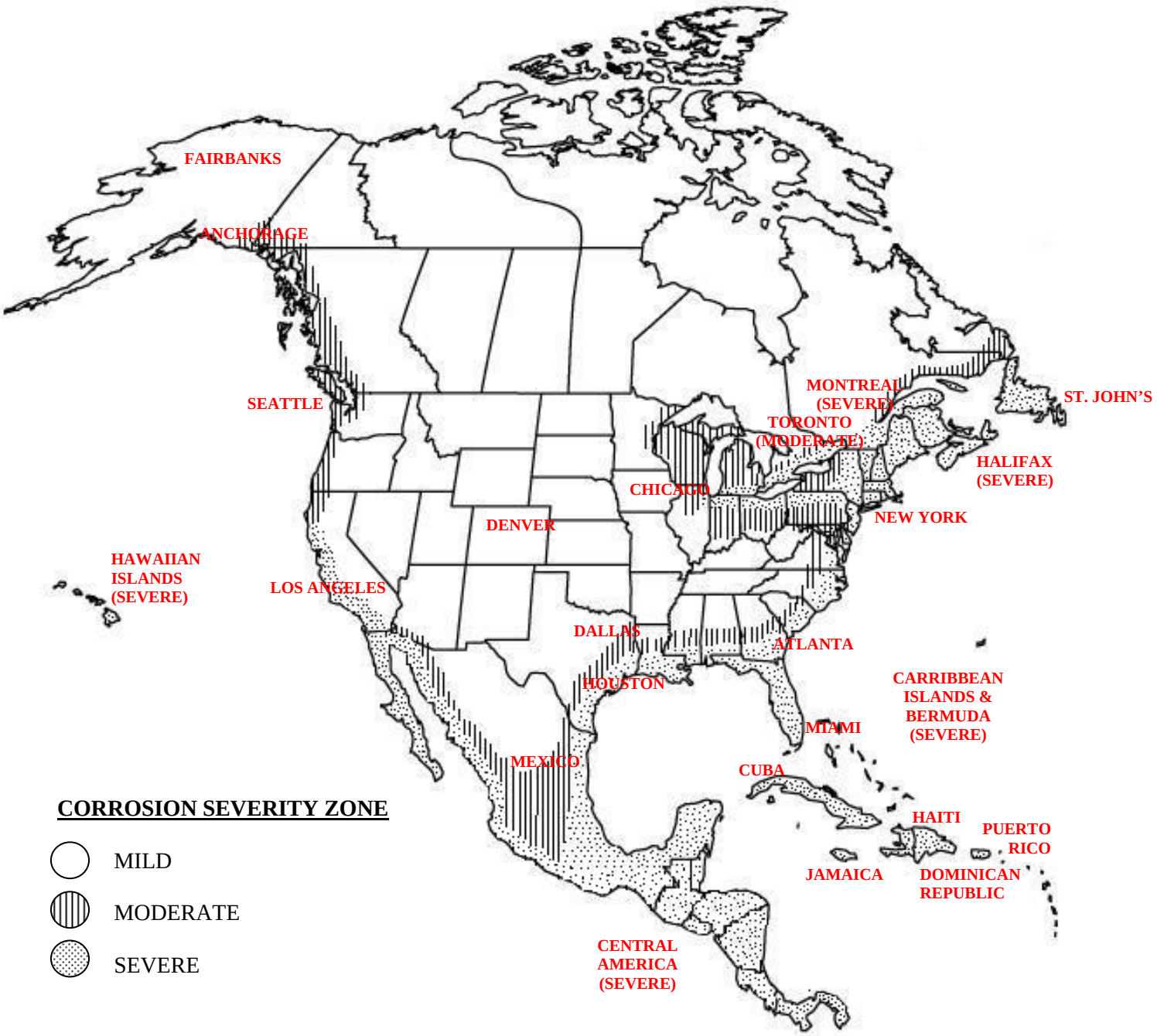

Figure 1. North & Central America Corrosion Severity Map

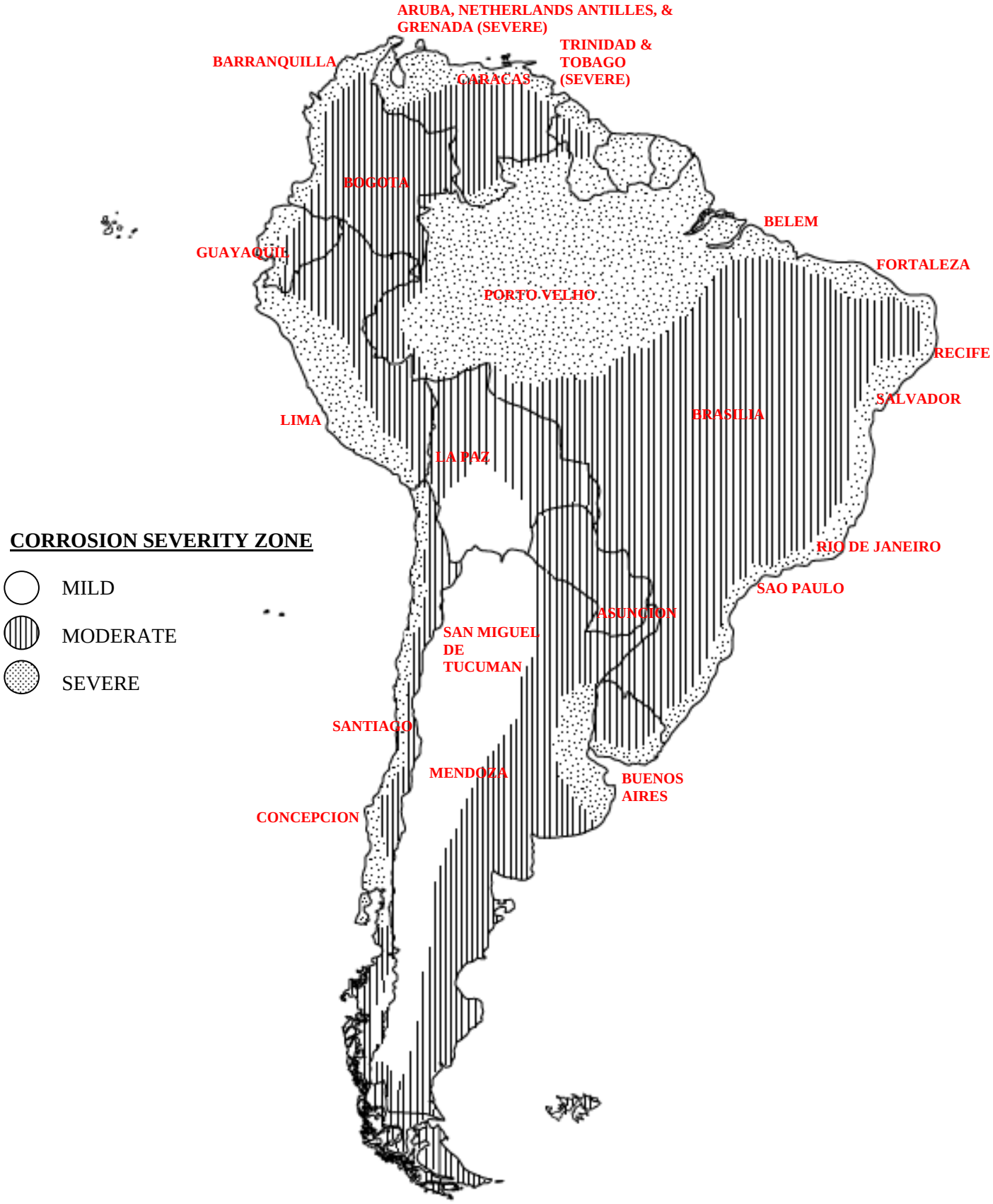

Figure 2. South America Corrosion Severity Map

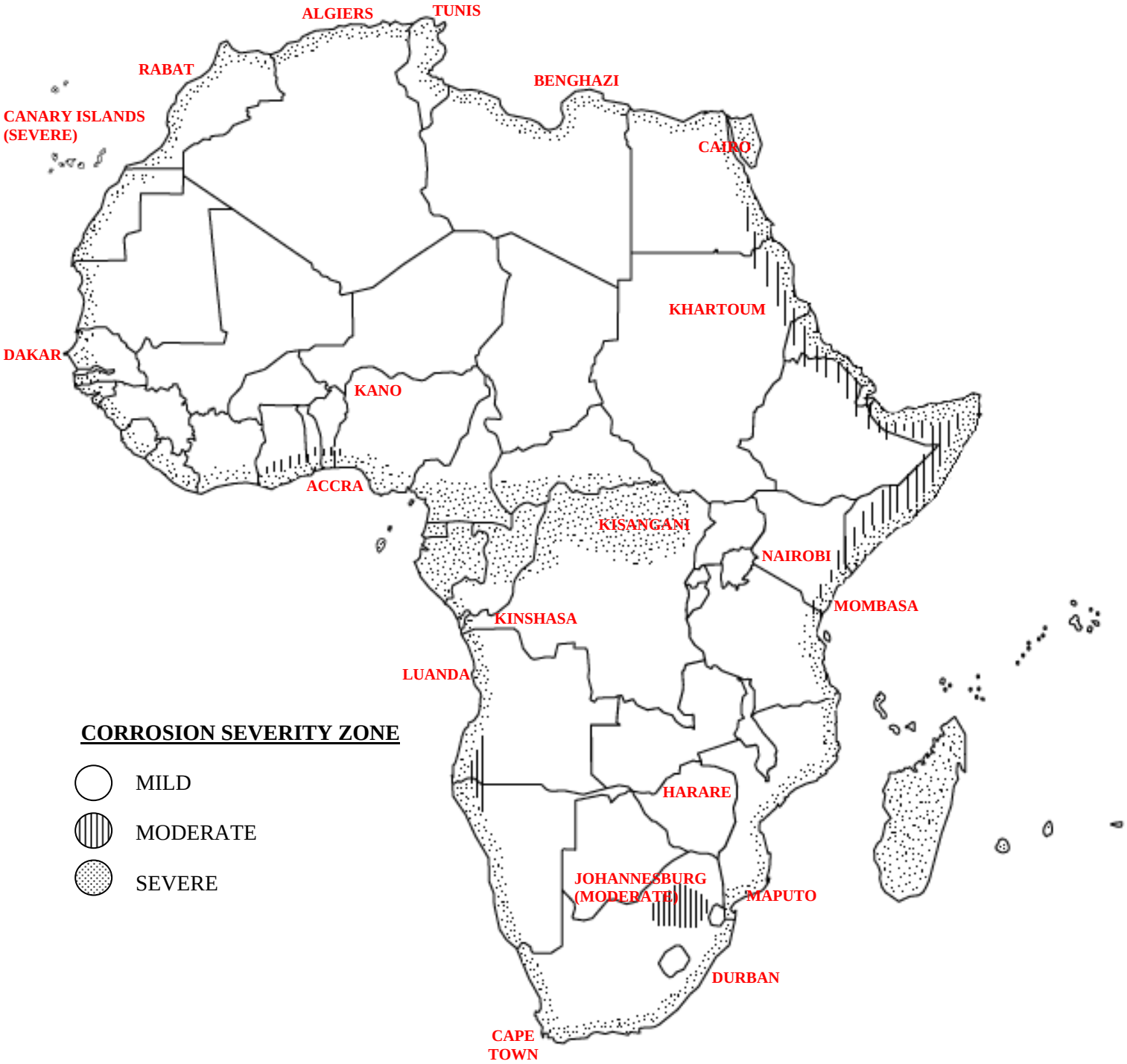

Figure 3. Africa Corrosion Severity Map

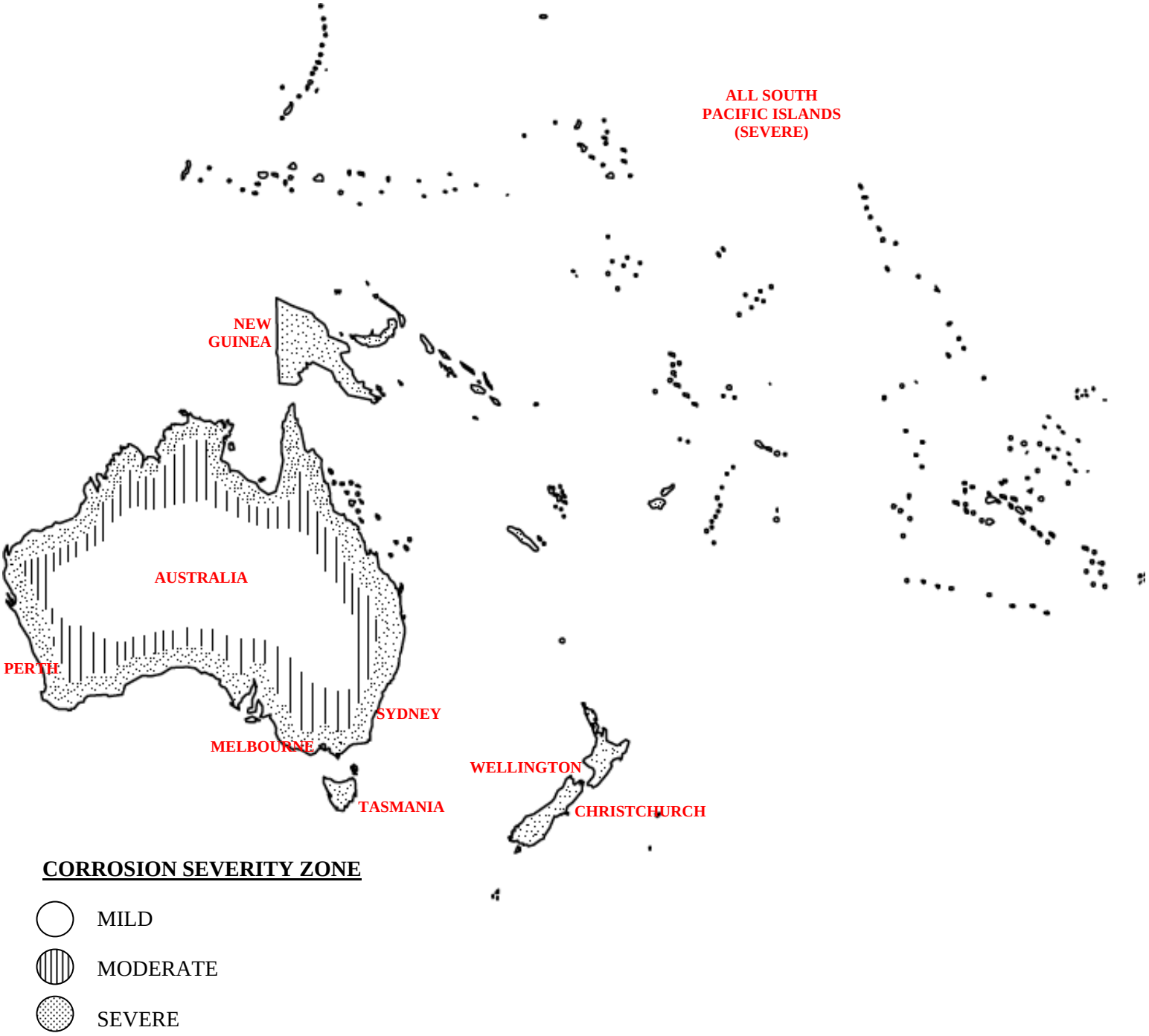

Figure 4. Australia & Oceania Corrosion Severity Map

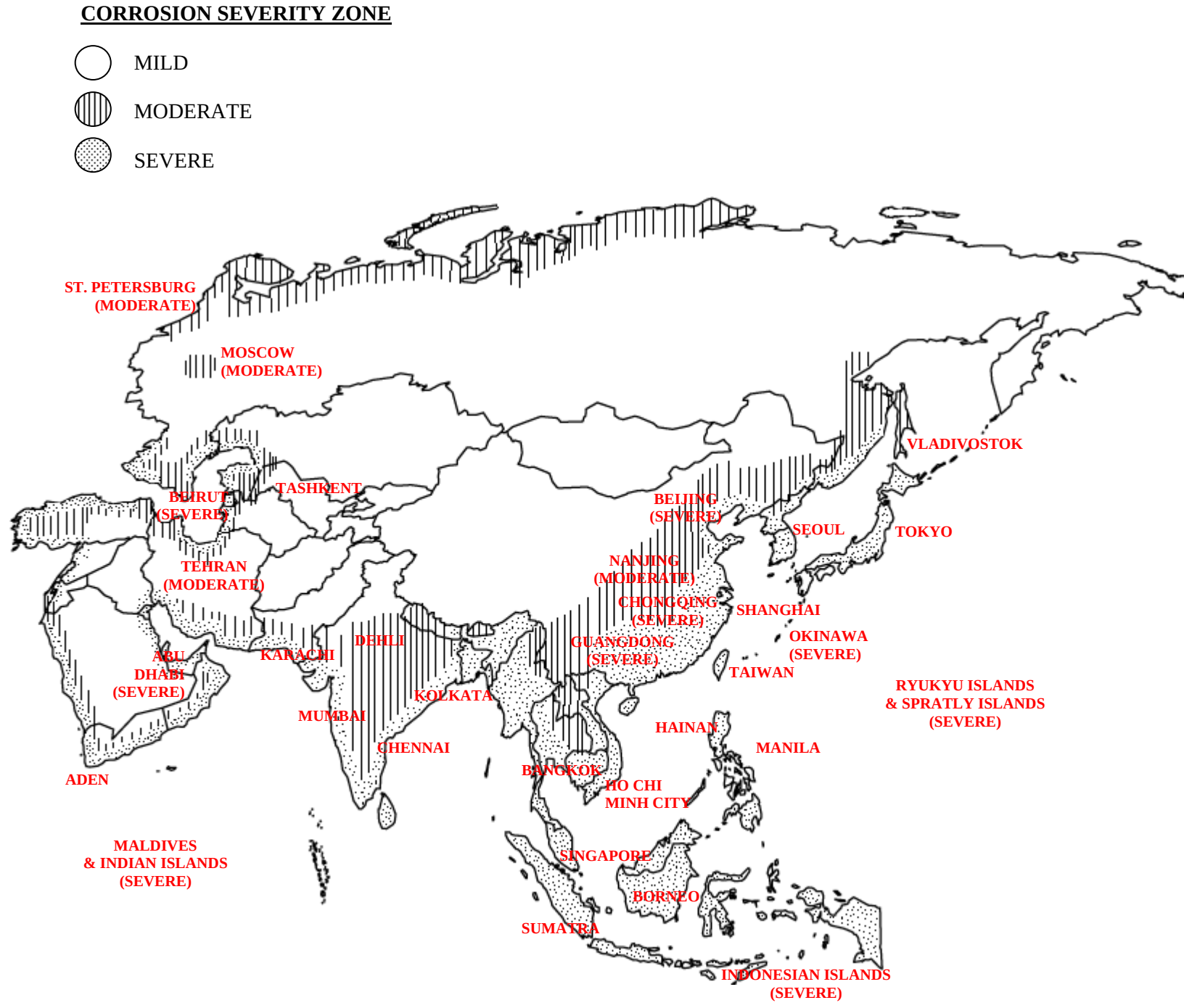

Figure 5. Asia Corrosion Severity Map

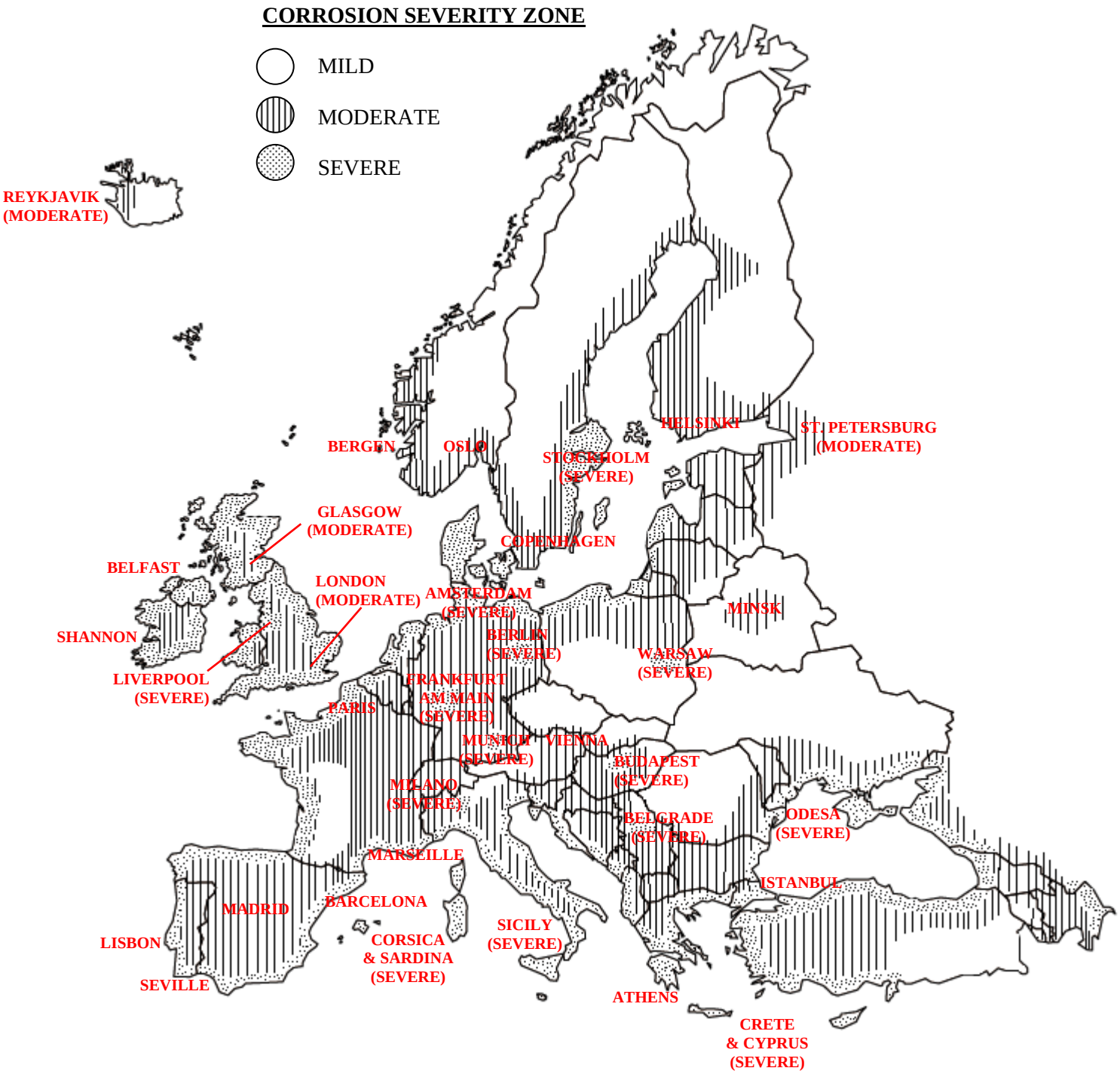

Figure 6. Europe Corrosion Severity Map