

# Snow and Ice Related Corrosion and its Effect on Equipment

## How do we cope

# Coping with corrosion can be placed in two categories

- Prevention
- Reaction

# Advantages of prevention

- Cost savings in repair parts
- Cost savings in repair labor
- Reduction in equipment down time
- Eliminate some types of corrosion all together
- Prevention can be planned

# Disadvantages of prevention

- **NONE**

# Advantages of reaction

- **NONE**

# Disadvantages of reaction

- Unexpected breakdowns
- Increase in downtime
- Increase in repair parts costs
- Increase in repair labor costs
- Decrease in equipment productivity

Therefore the primary focus should  
be on prevention

However realistically there  
is corrosion that can't be  
prevented therefore today  
we will discuss both



# There are 3 primary areas that corrosion effects

- Steel and steel components
- Aluminum and aluminum components
- Electrical systems and their components

# Examples of steel corrosion



# Examples of steel corrosion



# Examples of steel corrosion



# Examples of steel corrosion



# Examples of steel corrosion



# Examples of steel corrosion



# Examples of steel corrosion





# Examples of steel corrosion



# Examples of steel corrosion



# How do we prevent steel corrosion, a.k.a. RUST

- Wash, Clean, Rinse



# Prolonged exposure to chlorides is what does the damage

- Simple rinsing with a hose can help
- More direct or localized cleaning is even more effective



# How do we prevent steel corrosion, a.k.a. RUST

- Wash, Clean, Rinse
- Include in equipment specs the use of high quality primers and top coats
- Protect new components prior to installation
- Protect replacement components prior to installation

# How do you determine what primer and top coat will work for you?

- Systematically compare products on a small basis
- The use of test coupons is a very effective and inexpensive way to accomplish this



# Some other ways to prevent steel corrosion

- Wraps
- Covers or shields



A few dollars of prevention can save 100's or 1000's in repairs

- Watch for areas of un protected steel or aluminum





The following are examples of the second area which is aluminum corrosion



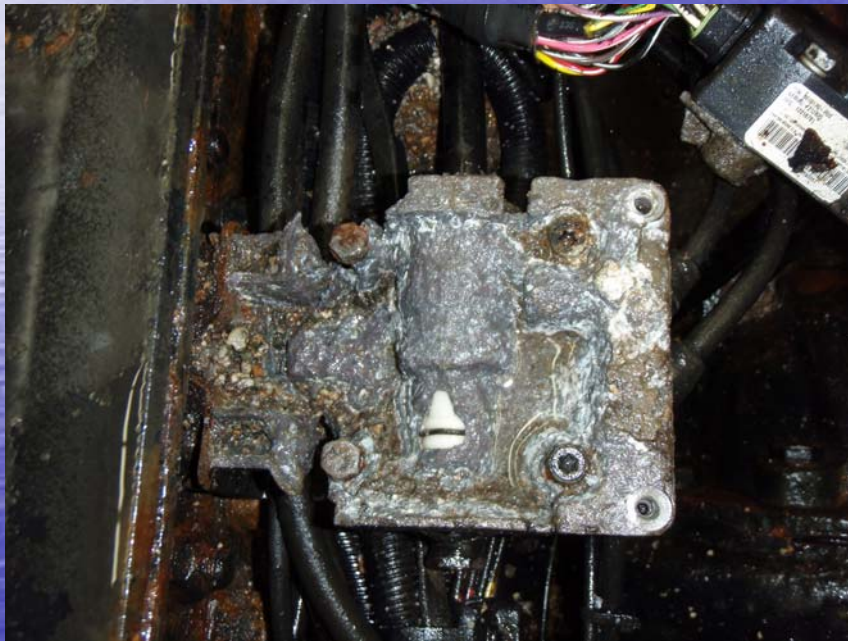
# Examples of aluminum corrosion



# Examples of aluminum corrosion



# Examples of aluminum corrosion



# Examples of aluminum corrosion



# Examples of aluminum corrosion



# Examples of aluminum corrosion



# Examples of aluminum corrosion





# Examples of aluminum corrosion



# Examples of aluminum corrosion



# How do we prevent aluminum corrosion

- Wash, Clean
- Utilize high quality primers and top coats, and other coatings



# Other ways to prevent aluminum corrosion

- Eliminate areas that solids and liquids can accumulate
- Potting materials
- Covers or shields



The following are examples of the third area which is electrical corrosion



# Examples of electrical corrosion



# Examples of electrical corrosion



# Examples of electrical corrosion





# Examples of electrical corrosion



# Examples of electrical corrosion



# Examples of electrical corrosion



# Examples of electrical corrosion



# How do we prevent electrical corrosion

- Don't set yourself up for a failure
- Don't compromise wiring integrity



# Some other ways to prevent electrical corrosion

- Include in equipment specs the use of high quality weather proof terminations
- Eliminate Junction boxes wherever possible
- Utilize dielectric products



# If a junction point can't be eliminated, evaluate alternatives to junction boxes

- The use of a buss style connector is one method, this is a weather proof connector that seals around each wire and its cap houses a buss bar



# Junction boxes, friend or foe

- If a junction box must be used, mount them in an environmentally friendly location
- Utilize compression fittings
- Utilize dielectric products





Since corrosion can't be completely eliminated we can now discuss the reaction aspect, of which there are two areas to focus on

- Neutralizing the existing corrosion
- Cleaning the area or material that was corroded

# To neutralize or not to neutralize, that is the question

- In most cases a thorough cleaning will also neutralize any corrosion
- Abrasive blasting and steam cleaning are two methods that can have the effect of neutralization simply by removing the corrosion.

In the event components are sensitive or heavy cleaning is not feasible, neutralization becomes more important.

- **NEUTRO-WASH™**  
Salt and Chloride Neutralizer from RHOMAR industries
- Battery Cleaner and Acid Detector from **Noco®**



# What to do once the corrosion is neutralized or the area in question has been cleaned

- Regular cleanings
- Coatings
- Sealants
- Wraps
- Component relocation (if reasonable)



# Products tested and used by WSDOT

- Martin Senour DTM 5225 3.5 VOC gray epoxy primer, NAPA
- Martin Senour PRISM 3.5 VOC gloss black acrylic urethane, NAPA
- Martin Senour 6599 cleanable hardener, NAPA
- **NEUTRO-WASH™**  
Salt and Chloride Neutralizer from RHOMAR industries, 1-800-688-6221
- Battery Cleaner and Acid Detector from **Noco®**, Any automotive parts distributor
- Densyl tape, Denso North America Inc. 281-821-3355