APPENDIX F

RIGGING INSPECTION AND REMOVAL CRITERIA

Rigging shall be inspected by a competent person and replaced in accordance with ANSI/ASME B30.9 and the manufacturer's recommendations. Rigging degradation not only indicates that the rigging is becoming unsafe and requires replacement; it also often indicates problem(s) with the rigging setup, use, or maintenance. Evidence of failure is cause for replacement of the rigging. At the minimum, rigging shall be inspected for the following failure modes:

1. WIRE ROPE.

a. Broken wires: for strand laid and single part slings, ten randomly distributed broken wires in one rope or five broken wires in one strand in one rope lay; for cable laid and braided slings, see Table F-1.

TABLE F-1

INSPECTING WIRE ROPE FOR BROKEN WIRES

Sling body	Allowable broken wires per lay or one braid	Allowable broken wires per sling length
less than 8-part braid	20	1
cable laid	20	1
8-part or more	40	1

b. Severe localized abrasion or scraping.

c. Kinking, crushing, birdcaging, protruding core, or any other damage resulting in distortion of the rope structure.

d. Severe corrosion of the rope or end fittings.

e. Evidence of electric arc or heat damage.

f. Excessive pitting or corrosion, or cracked, distorted, or broken fittings.

g. Diameter reduction:

(1) Reductions of 1/64 in (.04 cm) for diameters up to and including 5/16 in (.79 cm);

(2) Reductions of 1/32 in (.08 cm) for diameters 3/8 in (.95 cm) up to and including 1/2 in (1.3 cm);

(3) Reductions of 3/64 in (.12 cm) for diameters 9/16 in (1.4 cm) up to and including 3/4 in (1.9 cm);

(4) Reductions of 1/16 in (.15 cm) for diameters 7/8 in (2.1 cm) diameter up to and including 1-1/8 in (2.8 cm);

(5) Reductions of 3/32 in (.24 cm) for diameters 7/8 in (2.1 cm) up to and including 1-1/2 in (3.8 cm).

h. Significant stretching of the wire rope beyond the initial construction stretch.

i. Any sign of metal fatigue or other visible damage that causes doubt as to the strength of the wire rope.

2. FIBER ROPE.

a. Broken or cut fibers, either internally or externally.

b. Cuts, gouges, abrasions; seriously or abnormally worn fibers.

c. Powdered fiber or particles of broken fiber inside the rope between the strands.

d. Variations in size or roundness of strands.

e. Discoloration or rotting; weakened or brittle fibers.

f. Excessive pitting or corrosion, or cracked, distorted, or broken fittings.

g. Kinks.

h. Melting or charring of the rope.

i. Other visible damage that causes doubt as to the strength of the rope.

3. CHAIN. Inspect chains on an individual link basis. Chains shall be cleaned before they are inspected, as dirt and grease can hide nicks and cracks.

a. Wear: Replacement shall be as scheduled in Table F-2.

b. Stretch: Compare the chain with its rated length or with a new length of chain. If the length is increased 3%, the chain must be thoroughly inspected. If the length is increased by 5% or more, the chain shall be replaced.

c. Deformed links: Deformed (twisted or bent) links, or any chain in which a link assembly does not hinge freely with the adjoining link.

d. Cuts, gouges, or nicks: If the depth of the cut or gouge exceeds the value shown in Table F-2, the assembly shall be replaced.

e. Cracks: Cracks and other visible damage that causes doubt as to the strength of the chain.

TABLE F-2

ALLOWABLE CHAIN WEAR

Nominal Chain Size	Maximum allowable wear of diameter
9/32 in (0.7 cm)	0.037 in (.09 cm)
3/8 in (0.9 cm)	0.052 in (.13 cm)
1/2 in (1.3 cm)	0.069 in (.18 cm)
5/8 in (1.5 cm)	0.084 in (.21 cm)
3/4 in (1.9 cm)	0.105 in (.27 cm)
7/8 in (2.1 cm)	0.116 in (.29 cm)
1 in (2.5 cm)	0.137 in (.35 cm)
1-1/4 in (3.1 cm)	0.169 in (.43 cm)

4. METAL MESH SLINGS.

a. Broken weld or brazed joint along the sling edge.

b. Broken wire in any part of the mesh.

c. Reduction in wire diameter of 25% due to abrasion or 15% due to corrosion.

d. Lack of flexibility due to distortion of the mesh.

e. Distortion of the choker fitting so that the depth of the slot is increased by more than 10%.

f. Distortion of either end fitting so the width of the eye opening is decreased by more than 10%.

g. A 15% reduction of the original cross-sectional area of metal at any point around the hook opening of end fitting.

h. Excessive pitting or corrosion of fittings; broken or cracked fittings; distortion of either end fitting out of its plane.

i. Other visible damage that causes doubt as to the strength of the sling.

5. SYNTHETIC WEBBING SLINGS.

a. Acid or caustic burns.

b. Melting or charring of any part of the sling.

c. Snags, holes, tears, or cuts.

d. Broken or worn stitches.

e. Excessive abrasive wear.

f. Knots in any part of the sling.

g. Wear or elongation exceeding the amount recommended by the manufacturer.

h. Excessive pitting or corrosion, or cracked, distorted, or broken fittings.

i. Other visible damage that causes doubt as to the strength of the sling.

6. ATTACHMENTS.

a. Hooks that have been opened more than 15% of the normal throat opening (measured at the narrowest point) or twisted more than 10% from the plane of the unbent hook.

b. Deformed master links and coupling links.

c. Assemblies with cracked hooks or other end fittings.

d. Excessive pitting or corrosion, or distorted or broken fittings.

e. Other visible damage that causes doubt as to the strength of the attachment.