SECTION H
Tab 6

THE INSTALLATION OF

FALL PROTECTION SYSTEMS

FOR

TRO & PRODUCTION DIVISIONS

Prepared by: G.W. Lundrigan, P. Eng.
Engineering Design Department
Transmission & Rural Operations Divisions
June 22, 2005

Introduction

In 2004 Hydro submitted a Capital Budget Proposal for its 2005 Capital Plan, titled “Install Fall Protection/Travel Restraint Systems for TRO and Production Divisions”. This proposal was the first year of a four-year program, which was estimated at $993,000.00. The portion of the work proposed for 2005 was estimated at $206,200.00. This report is an update on the 2005 work and the status of the whole program.

The requirements for fall protection systems when working at heights of 3.05 meters and greater above the next lower level and when using permanently attached ladders of 6.1 meters or greater in length is addressed respectively by Sections 91 and 90 of the Occupational Health and Safety Regulations. The requirements when using portable ladders are addressed by Section 89. In the late nineties the CSA Standards, to which the Occupational Health and Safety Regulations refer, became more precise with respect to fall protection requirements. Since that time when new structures, such as the Nain and Natuashish Diesel Plants, were built permanent fall protection equipment was installed. Also, when major upgrades were completed to existing structures, such as the Stephenville Gas Turbine Generating Station fuel storage tanks, permanent fall protection equipment was installed. In all other areas access was either deferred or temporary measures were employed.

At the time the 2005 proposal was submitted a preliminary investigation identified approximately three hundred and ten (310) locations where fall protection systems might be required. The understanding was that each location would be evaluated and a decision whether to proceed with installation of a system would be made. The intention was to prioritize the list and first address the locations which needed to be accessed on a regular basis in order to perform routine operational and maintenance tasks. This list would be then further prioritized to address the locations which were considered the most hazardous. Also, it was understood that, in the final analysis, a number of the locations initially identified would not have permanent systems installed as the infrequency of access and the ability to utilize a temporary system when access was required made it unnecessary. Again, it was understood that although accessing certain locations could be considered hazardous they would not be addressed until access was needed as this access may not be until sometime in the distant future.

The locations identified have been categorized under four areas: Hydro Generation, Thermal Generation, TRO and General Facilities.

Status of Work for 2005

Hydro Generation

The majority of the locations addressed will be at the Bay D'Espoir Powerhouses # 1 and #2 and at the three surge tanks. This involves the installation of fall protection climbing devices on existing ladders, ten (10) in Powerhouse #1 and six (6) in Powerhouse #2, as well as upgrading of the surge tank climbing systems. These fall protection systems consist of a rigid rail attached to the access ladder with a locking pawl which attaches to the climber's belt or harness and which slides up and down the rail. Any slip or fall is stopped by the pawl's locking action. The total cost for this work is estimated to be $70,000.

Thermal Generation (Holyrood Generating Plant)

At the Holyrood Generating Plant the existing fixed ladders; one (1) in Pumphouse #1, one (1) in Pumphouse #2, six (6) interior ladders in the main plant and two (2) exterior ladders at the main plant; will be fitted with fall protection systems similar to those been used by Hydro Generation. The total cost for this work is $60,000.

Transmission and Rural Operations (TRO)

The areas to be addressed in 2005 are:

1) Vertical fuel storage tanks where access is required on a weekly basis to complete fuel measurements. These tanks are at Mary's Harbour, Black Tickle, Charlettotown, Makkovik, Rigolet and Nain. All other vertical tanks already have fall protection systems.

2) High buildings with roof mounted equipment such as ventilation fans that have to be accessed for regular maintenance. These include diesel plants located at Black Tickle, Charlottetown and Ramea. The Black Tickle and Ramea work is scheduled to coincide with major upgrades to the plants.

The Charlottetown building is the highest of our continuously operating plants and as such will be one of the first to have a fall protection system installed.

3) The larger power transformers. Three portable pole type fall arrest systems will be purchased. The greater number of larger transformers is in the Central Region and as such this will be the first Region addressed.

The total cost for this work is estimated to be $77,000.

General Facilities

This category is meant to cover locations such as Hydro Place, Bishop's Falls Depot and Regional Offices. There is no work planned for this category in 2005.

Future Plans

The 2005 program for $206,200.00 is the first year of a four-year program. Expenditures budgeted for future years are, $268,100 in 2006, $251,000 in 2007 and $271,000 in 2008 for a total of $992,900.00 for the four years.

Attached is a table entitled "Supply and Install Fall Protection Equipment – 4 Year Plan" wherein is presented a list of locations to be evaluated and, if required, where permanent systems will be installed in future years. Work to be completed in 2005 is also listed.

FALL PROTECTION SYSTEMS
SUPPLY AND INSTALL PROTECTION EQUIPMENT - 4 YEAR PLAN

s n	Division / Site	2005	2006	2007	2008	comments
	TRO-REGIONAL OFFICES					
1	Bishops Falls					Service Bldg, A/C Unit on roof (Warning Line)
2	Bishops Falls					Warehouse roof access requirements to be reviewed
3	Port Saunders					A/C Unit on roof
4	St. Anthony					No roof mounted equip. No fall protection required
5	Stephenville					A/C Unit on roof
6	Whitbourne					A/C Unit on roof
	TRO- CENTRAL					
A	**Diesel Plants & Tanks**					
1	Francois					Low Hor tank, Fall protection to be reviewed
2	Grey River					Low Hor tank, Fall protection to be reviewed
3	Hardwood G T					Rails & Stairs
4	Little Bay Islands					Exist. Rails & Platform
5	McCallum					Complete remaining minor work
6	Ramea					Fall arrest system to be installed for roof mounted exhausts
7	St. Brendan's					High Horizontal tank
8	S'ville Gas Turbine					All vertical Tanks done, G T bldg to review in 2007
B	**Power Transformer**					Install Removable Post Attachment on three (3) larger units
						Purchase three Portable Posts
	TRO- NORTHERN					
A	**Diesel Plants & Tanks**					
1	Charlottetown					Vertical Tank & Plant Exhaust Fans on Roof
2	L'Anse-au-Loup					Low Hor Tanks
3	Mary's Hr					Vertical Tanks and Plant Exhaust Fans on Roof
4	Norman Bay					Low Tanks, Exhaust Fans on Roof, Review in 2008
5	Port Hope Simpson					Low Hor Tanks
6	St. Anthony					To be completed with siding upgrading in 2006
7	St. Lewis					Eye bolts on cat walk for all tanks, Bldg to be reviewed
8	Williams Hr.					Review at time of tank(s) replacement in 2007
B	**Power Transformer**					Access requirements to be reviewed
	TRO - LABRADOR					
A	**Diesel Plants & Tanks**					
1	Black Tickle					All tanks done done, Plant 2005 upgraded. Includes fps
2	Cartwright					Review with Tank Replacement
3	Happy Valet G T					Tanks and G T Bldg
4	Hopedale					Review with New tank installation
5	Makkovik					Vertical & Horizontal in 2005, Plant in 2006
6	Nain					600,000 L tank, Plant has fps installed
7	Natuashish	-	-	-	-	Gated access ladder and Portable system for roof
8	Paradise River					Review requirement with new tanks installation
9	Postville					Eye bolt to cat walk
10	Rootlet					1-vertical tank in 2005,2 Horizontal tanks in 2006
11	North Plant					System installed
B	**Power Transformer**					Access requirements to be reviewed

FALL PROTECTION SYSTEMS

SUPPLY AND INSTALL PROTECTION EQUIPMENT - 4 YEAR PLAN (Cont'd)

s n	Division / Site	2005	2006	2007	2008	comments
	GENERATION					
A	**Thermal (Holyrood)**					
1	Fuel Storage Tank					Day tank existing FPS to be reviewed
2	Gas Turbine Building					Roof mounted equipment to be serviced by own forces.
3	Holyrood Plant external					Access ladders to be equipped with safe climbing device
4	Holyrood Plant Internal					Access ladders to be equipped with safe climbing device
5	Pumphouse 1					Access ladders to be equipped with safe climbing device
6	Pumphouse 2					Access ladders to be equipped with safe climbing device
7	Training Room					Access requirement to be reviewed
8	Warehouse					Access requirement to be reviewed
B	**Hydro**					
B1	**Bay D'Espoir**					
1	Intake					Access ladder to be equipped with safe-T- track
2	Main P H external					Access ladder to be equipped with safe-T- track
3	Main P H internal					Access ladder to be equipped with safe-T- track
4	Other buildings					Access requirement to be reviewed
5	Surge Tank					Upgrade existing climbing device
6	Unit 7 P H external					Access ladder to be equipped with safe-T- track
7	Unit 7 P H internal					Access ladder to be equipped with safe-T- track
B2	**Upper Salmon**					
1	P H External					Safe T track to be installed
2	P H Internal					Safe T track to be installed
3	Other Buildings					Requirements to be reviewed
B3	**Hinds Lake**					
1	P H external					Safe T track to be installed
2	P H internal					Safe T track to be installed
3	Other Buildings					Requirements to be reviewed
B4	**Cat Arm**					
1	P H external					Safe T track to be installed
2	P H internal					Safe T track to be installed
3	Other Buildings					Requirements to be reviewed
B5	**Paradise River**					
	P H External					Access requirements to be reviewed
	P H Internal					Access requirements to be reviewed
B6	**Granite Canal**					
1	Power House	-	-	-	-	Fall Protection System installed during construction
	Hydro Place					Requirements to be reviewed

H:\TRO Engineering\GEOLUNED\[Fall Protection System Program --Status Tablet ~4011555.xls]Sheet1

Updated June 21, 2005

Photos

The following are pictures of typical examples of the Fall Protection Systems which will be installed.

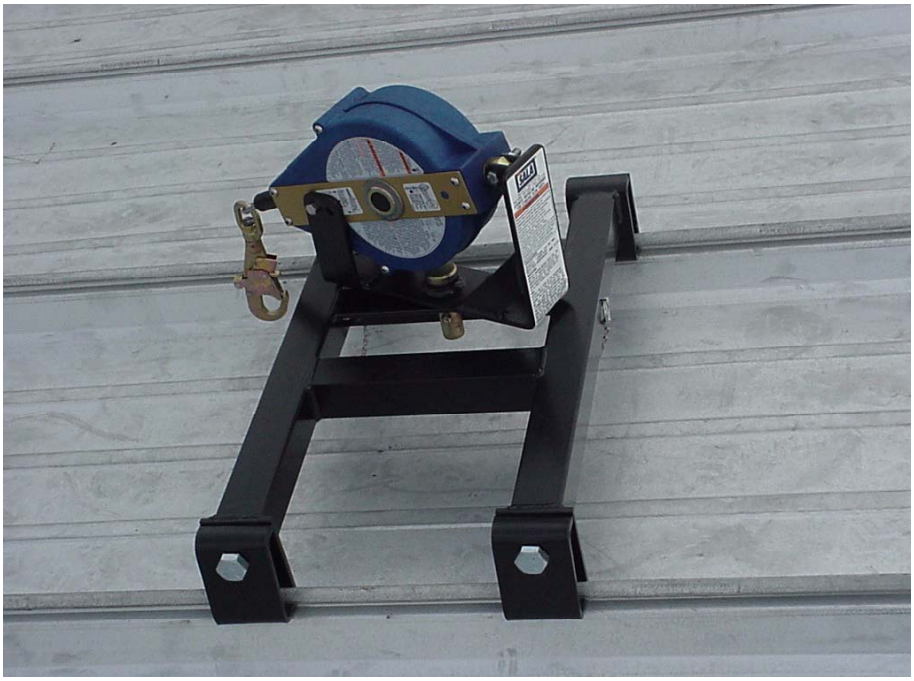

Photo # 1—Natuashish Diesel Plant—Travel Restraint Device attached to Metal Roof's Standing Seam

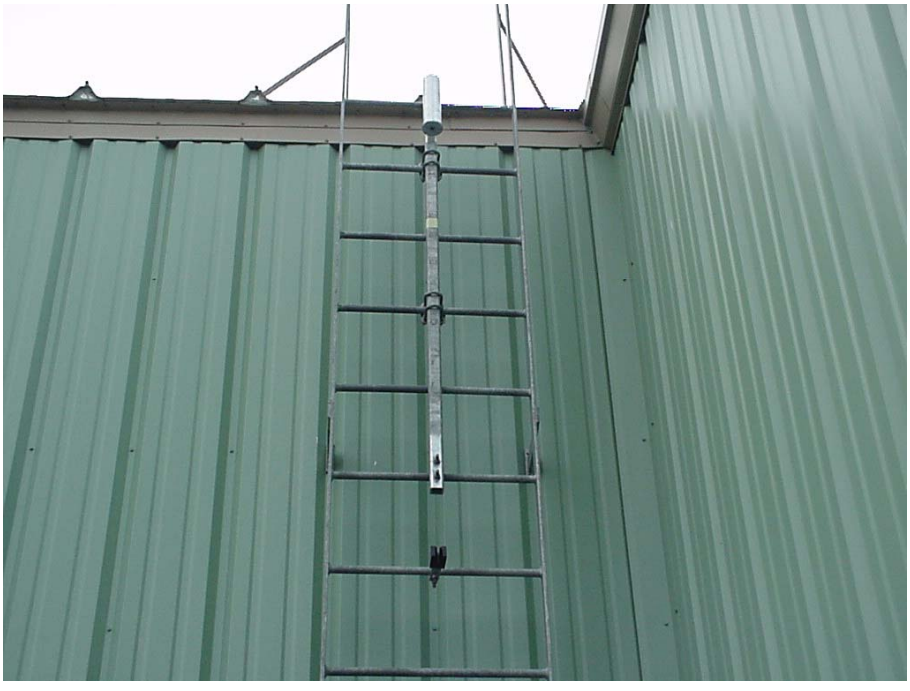

Photo # 2---Natuashish Diesel Plant---T-Rail attached to Building Access Ladder.

Photo # 3—Stephenville Gas Turbine Generating Station (STGTGS)

Fuel Storage Tank with T-Rail Attached to Ladder and Safety Wire Attached to Tank Center Vent

Photo # 4—STGTGS--- Fuel Storage Tank with T-Rail Attached to Ladder

Photo # 5—STGTGS Fuel Storage Tank with Safety Wire Attached to Tank Center Vent

Photo # 6—Typical Arrangement for Worker Attachment to Ladder's T-Rail

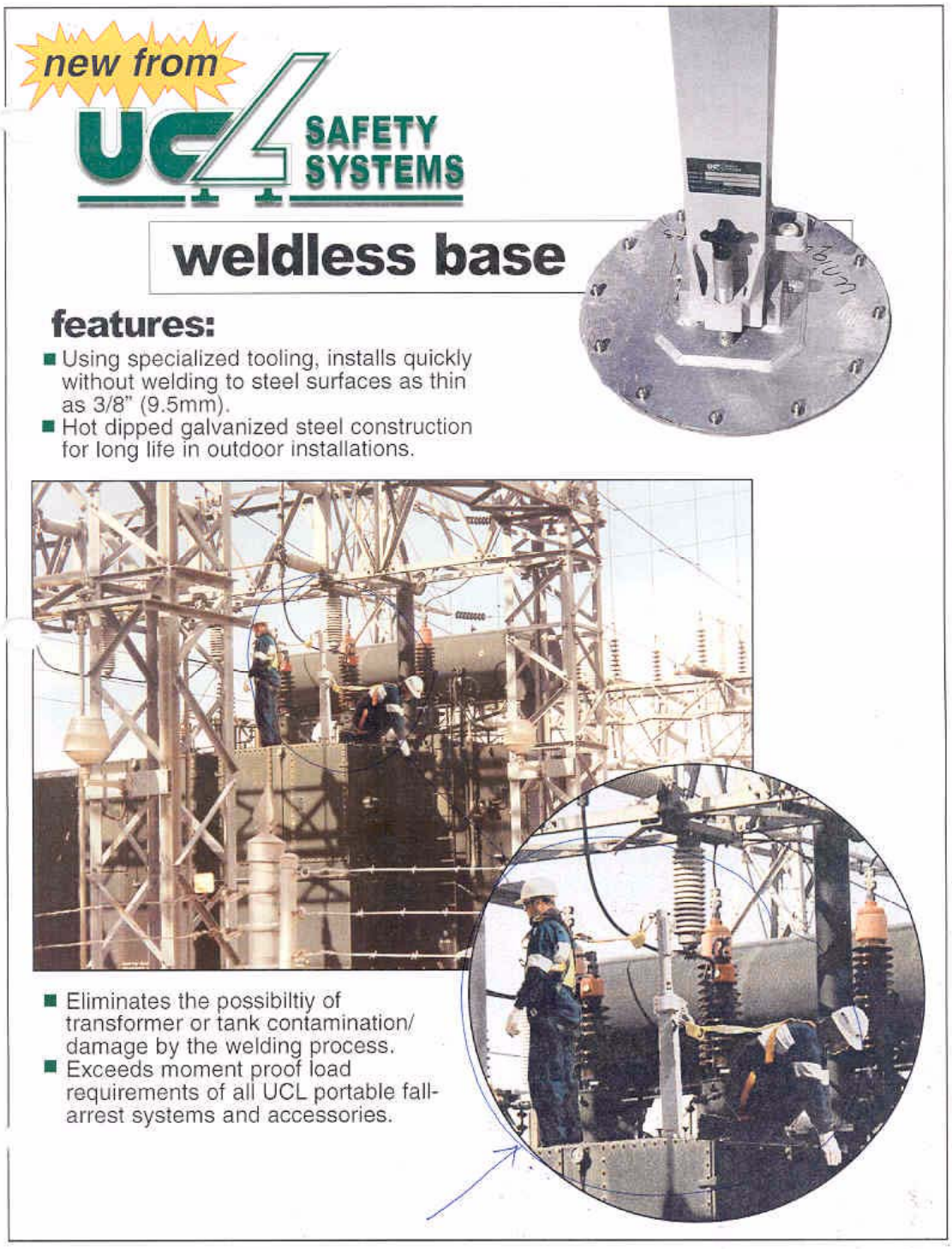

Photo # 7—Showing Workers attached to a Portable Pole which will be Attached to Transformers as required

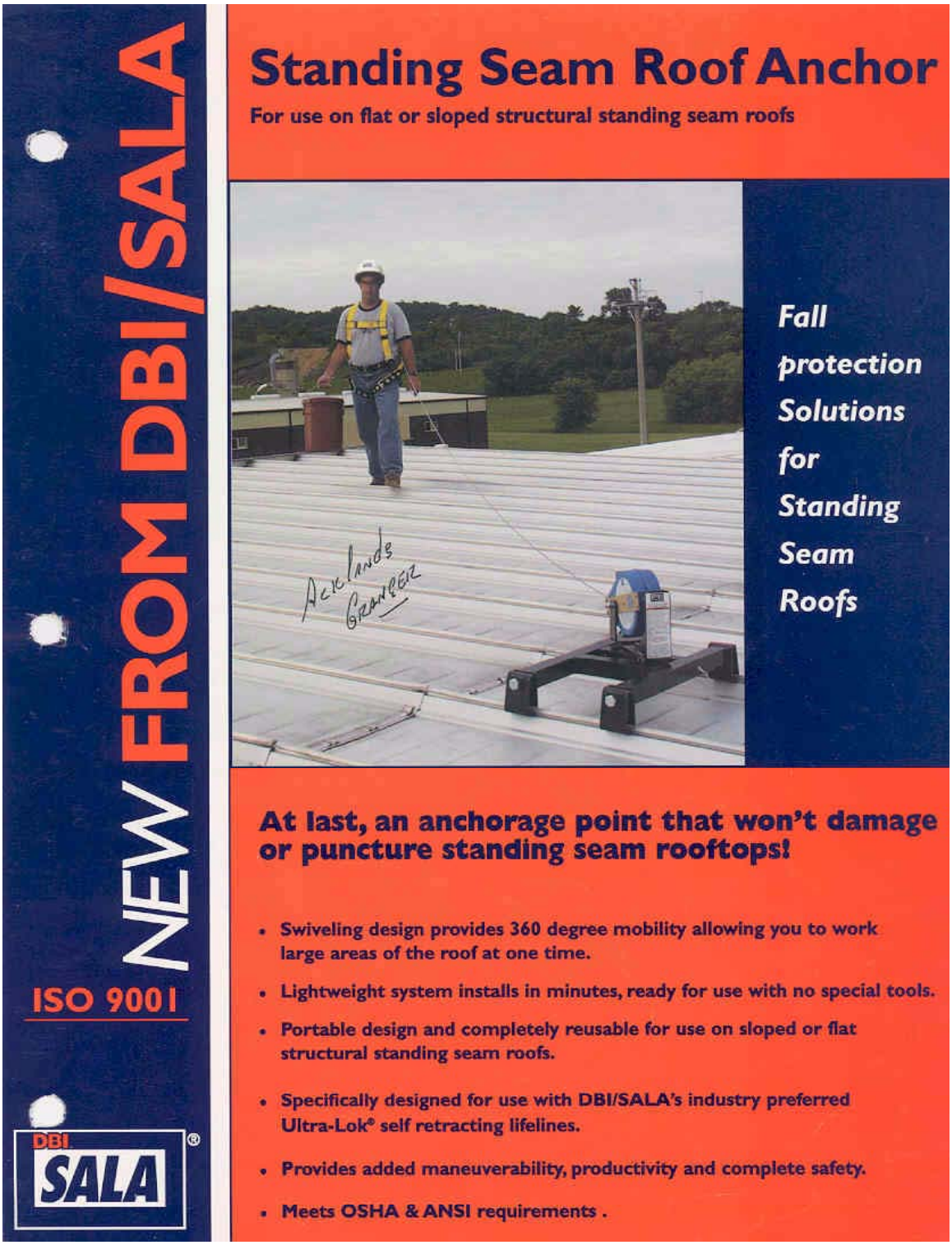

Photo # 8—Standing Seam Roof Anchor Similar to Ones Installed at New Diesel Plants in Nain and Natuashish