

## **Final Report: December 14, 2005**

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### **Save It If You Can: Mad River Glen's Single Chair Ski Lift**

#### Chairlifts Boost Vermont's Ski Industry

Mad River Glen is the home of Chair #1, the longest and oldest operating ski lift still in its original location in North America – a historical treasure for the ski industry. Skiing is Vermont's most important recreational industry. Today, the winter sport of skiing provides recreation, employment and critical tax revenues throughout Vermont. The theme of this story is how inventions in ski lift technology made contributions to the success of the Vermont ski industry and are an important part of the state's industrial history.

Prior to the development of chair lifts, there were many inventions to meet the challenge of 'getting up the hill.' This challenge for alpine skiing had been solved in Europe with cog railways and aerial lifts. Although there were rope tows in Europe as early as 1908, the first rope tow for skiing was patented in Switzerland in 1931. Based on a successful Canadian rope tow installation during the 1932-33 season, the first in North America, rope tows appeared first on the mountains in Vermont and then spread quickly throughout New England.

The Woodstock, Vermont, 'Ski Way' was the first rope-driven ski lift, a long loop of continuously moving rope, in the United States. In January 1934 a Model T Ford truck engine dragged four or five skiers, as they held onto the rope, up a 900' mountain and an era of invention, in getting skiers safely and quickly up the hill, led to early homemade rope tow contraptions at Shrewsbury, Corinth and Putney, Vermont. However, learning to handle a rope tow was tougher than learning to ski.

During the 1935-36 season, the first wire cable-driven ski lift in New England was installed on Oak Hill near Dartmouth College in New Hampshire. It was what is now called a J-bar, the first continuously operating overhead steel-wire cable lift, and was meant to hook around one's waist. The American Steel and Wire Company, a division of the United States Steel Corporation, was well known for manufacturing devices to transport materials by wire cables, like coal and bananas.

This New Jersey company supplied the wire cable and a local company designed the towers and erected the lift that was used by the Dartmouth Ski Team. Early rope tows, J-bars, and later T-bars, all required the skier to stand up with skis on and hold on for the bumpy and perilous ride up the mountain.

The advent of the chairlift, that allowed the skier to sit down, was a safe and simple device that the public accepted enthusiastically. It was also the most cost-effective way to transport the expanding crowds of skiers up the mountain. Based on American Steel and Wire's engineering work in New Hampshire, the world's first single chair ski lift was designed and installed at Sun Valley, Idaho in December 1936. New England's first single chair lift was constructed in Gilford, New Hampshire at the Belknap Recreation Area (today Gunstock) in the 1937-38 season.

New England is covered with forested mountains. The development of ski trails in the modern sense - in contrast to farmer's meadows, logging roads and the AMC's winter tramping trails - was a direct result of the popularization of ski lifts. The Depression also had a significant impact on this development; funds were channeled to the Civilian Conservation Corps to provide labor for cutting the first ski trails and roads up the mountains in Vermont. Vermont's Forest Service director, Perry H. Merrill, arranged to have CCC crews cut trails in the summer of 1933 on Mt. Mansfield in Stowe.

Roland Palmedo was an investment banker and president of the Amateur Ski Club of New York. In 1931 Palmedo's skiing interests focused on Mt. Mansfield in Stowe. At Stowe, Palmedo was active in the formation of the first ski patrol in the United States in January 1936. Commercial operation of the first rope tow began in Stowe in February 1937. By 1938 Palmedo and his friend, J. N. Cooke, recognized the potential of the new chair lift technology and began soliciting investors for a six-thousand-foot chairlift up Mt. Mansfield, Vermont's highest peak (4,393') in Stowe.

Roland Palmedo was President and James Negley Cooke was the Vice-President of the Mt. Mansfield Lift Inc. which financed construction of the first chairlift in Vermont to the top of Mt. Mansfield for the 1940-41 season. This single chairlift, constructed by the American Steel & Wire Company, was the longest (6,330') in the world at the time and opened in December 1940. It carried eighty-six single chairs and the ascent took less than fifteen minutes. This second chair lift in the East put Stowe on the map as the 'Ski Capital of the East' and the recreational skiing industry was launched in Vermont. Fast, overhead,

cable-lifted non-detachable chairs welcomed thousands of New Englanders to the exciting sport of alpine skiing.

In 1940 the T-bar, for lifting two people, made its first appearance in North America on Pico Peak near Rutland. This T-bar was a Swiss design engineered by the wire rope manufacturers J A. Roebling & Sons of Trenton, New Jersey. During the next two decades the number of T-bars built far surpassed the number of chairlifts. With so many and varied up-ski devices, a Ski Tow Owners Association was formed and they looked for technological answers to accommodate the ever-increasing crowds. Before the Second World War started, the New England ski industry could boast of Vermont's first aerial ski lift, several other chairlifts that competed with Sun Valley and the West, as well as J-bars, T-bars and rope tows dotting the landscape of the Green and White Mountains. By the 1941-42 season, the sixth season since the chairlift had been invented, American Steel and Wire had built 9 of the 18 chairlifts in North America.

Following the War, Cornelius Vander Starr financed the installation of a second ski lift at Mt. Mansfield, a 4,000' T-bar lift, which opened in the 1946-47 season. At this time, five business interests had claims on mountain activities with no centralized responsibility. Starr consolidated these activities and by 1953 he was Chairman of the Board of the Mt. Mansfield Company, Inc.

Roland Palmedo and J. N. Cooke, traditionalists disenchanted with the commercial growth at Stowe, sold their interests in the chairlift operation during this consolidation trend and looked 28 miles south on Route 100 where, with the Amateur Ski Club of New York, they led the development of another ski area in 1946-48. Roland Palmedo and J. Negley Cooke left a legacy to the ski industry on Mt. Mansfield in Stowe, the first chairlift in Vermont.

As skiing became the winter sport of choice for many social and economic classes, the crowds multiplied and the practice of replacing single chair lifts with double, and later triples and quads was repeated throughout the New England ski industry. Stowe's first single chairlift was replaced in 1985 or 1989 with a quad, a chair that seated four people.

#### Mad River Glen Gets A Lift

Roland Palmedo and J. Negley Cooke distanced themselves from the development at Stowe and financed a new ski area after the War. In March 1946, Palmedo and Cooke found a site for their dreams on General Stark Mountain in Fayston. Palmedo, as President from New

York City and Manchester, and Cooke, as Vice-President from Brattleboro, formed the Mad River Corporation in November 1946 and began acquiring land on Stark Mountain (3570'). They named the project Mad River Glen, after the Mad River that flows in the valley on the Waitsfield side of the mountain.

As early as 1945 the State of Vermont had conducted a survey to discover suitable locations for a major integrated ski development. Twenty-eight lift line locations were selected and Stark Mountain's snow conditions, altitude, exposure and terrain were just about perfect. Also, Mad River Glen was only 14 miles from the Middlesex station where the 'Montrealer' and the 'Washingtonian' stopped on the mainline of the Central Vermont Railway that brought skiers from urban areas on 'snow trains' to skiing in the Green Mountains.

Vermont Governor Ernest W. Gibson signed a bill in the 1947 legislative session approving the sale of land bordering the A. I. McCullough Turnpike, (less the 50' road right of way) to the Mad River Corporation. The turnpike had been constructed by the CCC in 1933. This \$90,000 road project ran for 4 ½ miles from Route 100 in the river valley to a parking loop at the new ski area. Palmedo and Cooke believed that the state would vastly improve, as well as maintain, the road (later renamed Route 17) so that the ski area would be accessible throughout the year. Dan Kiley and Associates of Franconia, New Hampshire, specialists in site, recreational and regional planning, were engaged to make a study of the development potential of the area. There was no public offering of stock in the Mad River Corporation, rather it was offered to private friends and acquaintances of Palmedo and Cooke. When the offering was made, the corporation had already acquired and had purchase options on 1650 acres or just over 2 ½ square miles on Stark Mountain.

The trails on the northeastern slopes of General Stark Mountain were surveyed and laid out by Robert Schwarzenbach, a member of the 1940 US Olympic ski team. There were five trails cut through the forest in the summer of 1947; three expert trails from the top of the mountain and two intermediate trails from the midway station. Schwarzenbach was assisted by Charles D. Lord, who had engineered most of the trails on Mt. Mansfield, and Nancy Reynolds Cooke, the former national women's ski champion. Alexander 'Sandy' McIlvaine, an architect from New York City, designed two warming shelters, 'Stark's Nest' at the top and 'Base Box' at the bottom of the mountain. These historic buildings are still in operation.

In 1947 Mad River contracted with the American Steel & Wire Company to engineer, design, fabricate and partially install a state-of-

the-art single chairlift. At this time, single chairs were the chairlifts of choice; doubles, triples, and quads, would be the preferred choice of large development-oriented ski resorts of the future. Fortunately, the lift line crossed a short, almost flat shelf at about the 2,600' level, perfect for a half-way station. Construction of the chairlift was started in the summer of 1947 but because of an early snow fall, several lift towers were not completed in time for the winter season.

Mad River Glen's Chair #1 is a single chair monocable chairlift with an initial lifting capacity of 200 pph (people/per/hour) and an ultimate capacity of just over 400 pph. The original 69 chairs were spaced at 165' on the wire rope and with the addition of 71 chairs in 1955; a capacity of 400 pph was realized. Later, 18 more chairs were added to bring the capacity up to 450 pph for a current total of 158 chairs. In 1989, 20 of the original chairs were replaced with chairs that had an improved design for the footrest.

Since 1947, the lift called Chair #1 has had some modifications and in general has had a remarkable operational and safety record for its age of 58 years. A detailed engineering evaluation in 2004 reported other modifications since 1947 to the equipment, towers and electrical system that operate Chair #1.

This single chair lift at Mad River Glen was the fifteenth passenger lift constructed by the American Steel & Wire Company. Construction of the bottom drive terminal with a large cast iron drive bullwheel, a top tension terminal with cast iron bullwheel, 21 lift towers, and installation of the chairs was completed by the fall of 1947. The chairs were suspended on more than two miles of 1-½" steel cable, the largest ever used. The prime mover was a 140 horse-power diesel motor, the largest ever used for such a purpose. A rack-and-pinion gear system connects the engine directly to the bullwheel that drives the wire cable with the attached chairs up the mountain. Operation of this lift requires 6 or 7 employees and the lift is moving 7 hours a day every day for about 120 days in the winter season. In about 12 minutes the chair carries a skier 1970' vertical in one mile, from 1600' at the base to 3570' at the summit. This \$150,000 engineering achievement was the second chair lift in Vermont and placed Mad River Glen as the only rival to the 1940 chairlift at Stowe.

To start the trip up the mountain, the skier steps up to the loading platform and takes a seat on a chair as it is carried along the overhead moving cable. The rider closes a safety handle, puts his feet on the rest and settles back to enjoy a smooth, pleasant climb up the mountain. A few minutes later, at the crest of the hill, the rider simply skis off and prepares to ski down one of the trails. At the top of the mountain,

Vermont's famous Long Trail runs along the skyline and provides breathtaking views west to the Adirondack Mountains of New York and east to the White Mountains of New Hampshire.

Governor Ernest Gibson joined Palmedo, Cooke and Miss Vermont for the official dedication of the Mad River Glen Ski development on December 11, 1948. Roland Palmedo acted as master of ceremonies. Unfortunately, a lack of sufficient snow prevented the assembled dignitaries from enjoying the lift ride up Stark Mountain and skiing back down the mountain. About 600 people took advantage of the free ride up the mountain and all the major Vermont newspapers predicted success for this new \$400,000 ski development in the East. The enterprise was a bold venture; in the winter of 1948-49 skiers had no less than 55 ski areas to choose from in Vermont, including Stowe, Bromley, Pico and Ascutney Mountain.

By late January of 1949, there was sufficient snow cover to begin full time operation of the single chairlift at Mad River Glen. Palmedo promoted the trails and ski touring opportunities in the ski industry journals. Mad River had a big advantage, a new single chair ski lift. The new ski area was a huge success and by the opening of the second season in December 1949, journalists referred to Stowe and Mad River Glen as the 'Snow Corner of New England'. The success at Mad River Glen was also made possible by the Mad River Association which included everyone in the valley with a business interest in the new ski area's future; thus fostering an integrated business commitment.

Roland Palmedo, a pioneer in Vermont's ski industry, recognized the value of skiing as art, aspiration and achievement, as well as a personal connection with the nature of the forested mountain. For Palmedo and his successors at Mad River Glen, skiing was a near-spiritual endeavor, not simply weekend recreation, and this aesthetic environmentalism was continued by his successors.

### Ski It If You Can

Mad River Glen is one of the last preserves of the classic winding New England ski trail that was the norm at ski areas in the 1940s and 1950s. While the rest of Vermont's ski areas have spent decades 'upscaling, expanding and transforming', Mad River Glen was not planned to be a 'destination resort'. Mad River is a refuge for skiers craving diversity with running, steep mogul, and gladed trails that wind through the contours of the forested mountain. Unique among Vermont ski areas, Mad River Glen is on 700 acres of privately owned land.

To handle the increasing crowds a double chair ski lift, called the 'Sunnyside Chair' was installed in 1962, and another double chair, named the 'Birdland Chair' was installed in 1967. In the practice area near the base of the mountain, a rope tow was installed in 1950 and a T-bar in 1958; both have been replaced. A third double chair, named the 'Practice Slope Chair' was installed in 1972 and Callie's Corner Handle Tow was operational in 2000; both are still in service. Because of the owner's determination to preserve the character of Mad River Glen's skiing experience, the historic Chair #1, the single chair lift, is still in operation.

In 1972 Roland Palmedo decided to sell Mad River Glen to a group of investors who shared his vision, and in 1974 Truxton Pratt became Chairman of the Board and President. 'Trux' was followed in 1975 by his widow Betsy Pratt with Ken Quackenbush as President and he held that position until 1983 when Betsy Pratt became President and sole owner of Mad River Glen. Betsy Pratt continued in the spirit of the original vision by maintaining the original low-development, low-impact environmental agenda. In 1995 Mad River skiers formed the Mad River Glen Cooperative with the goal of buying the ski area. Sufficient funds were raised by selling individual shares in a cooperative and in 1998; Mad River became the first, and is still the only, skiing co-op in the United States.

The shareholders mission is '*...to preserve and protect the forests and mountain ecosystem of General Stark Mountain in order to provide skiing and other recreational access and to maintain the unique character of the area for present and future generations.*' The Co-op paid off its mortgage in 1999 and now the mountain, the ski lifts and buildings on 700 acres are owned by the private Co-op. The Co-op is committed to preserving the undeveloped nature of the mountain and Chair #1, the historic single chair lift. The ski area is managed by a hired staff with direction and leadership provided by the Board of Trustees elected by the shareholders.

In 1984, Mad River Glen adopted the slogan '*SKI IT IF YOU CAN*' and it has proved to be a marketing success. Skiers love the single chair, not only because it's historic and the last of its kind, but because its low capacity means that once you get up to the summit, you are virtually alone to experience skiing the way many feel it was 'meant to be' in New England.

In 2004 a detailed engineering evaluation proposed modifications to the top tension terminal, towers, bottom drive terminal, line equipment and electrical circuits that constitute a 'restoration' of the single chair ski lift. These modifications will bring the lift into

compliance with new industry-mandated safety requirements and prolong the life of the structure. The lift will be maintained in its present location and modifications for the estimated \$ 1.5 million 'restoration' will not detract from the 'historic integrity' or the 'historic significance' of the ski lift.

#### Save It If You Can

Chair #1, the 1948 single chair ski lift at Mad River Glen, is historically significant because, 1) it is New England's oldest example of a technology that revolutionized the American ski industry and, 2) its association with the development of Vermont's most important recreational industry. The following is a list of recommendations:

- 1) Nominate the historically significant Chair #1 to the National Register of Historic Places, the official Federal listing of historic, architectural and archeological resources worthy of preservation.
- 2) Nominate Chair #1 to be an 'engineering landmark' officially recognized by the American Society of Mechanical Engineering. See their History and Heritage Center for program information.
- 3) Document the structure to the standards of the Historic American Engineering Record (HAER), a division of the National Park Service. See their 'preservation through documentation' program for information.
- 4) Repair and maintain Chair #1 to meet Vermont and new ANSI codes. *SAVE IT IF YOU CAN.*

