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Performance Indicator

Robb Osinski and Bob Winskowicz had been friends for twelve years and business partners for five. In the middle of 2002, they felt that they were on the verge of a breakthrough in the commercialization of a new technology that their firm, Performance Indicator, LLC, had developed to let golfers know when a used golf ball had suffered performance degradation due to immersion in water hazards like ponds and creeks on golf courses. Specifically, they held patents on technology that would change the color or appearance of balls when they had been submerged in water for an extended period of time.

Osinski and Winskowicz originally believed that selling the idea would be easy; after all, it seemed evident that this could at least double the size of a stagnant $1 billion industry. The pitch was simple. Even by the most conservative estimates, golfers lose about 150 million dozen balls in play each year. However, they only buy about 50 million dozen new balls. The other 100 million dozen must be used balls (either found or commercially repackaged and resold), about half of which are recovered from water hazards. If you could take the water-damaged balls out of circulation, golfers would have to buy another 50 million dozen new balls to replace them at around $20 a dozen. That extremely conservative scenario pointed to an increase in industry sales of $1 billion a year. *Golf World* put the number of lost balls at 220 million dozen (4.5 per round); applying the same logic to that number suggested an increase in industry sales of $1.6 billion. Some manufacturers put the number of lost balls even higher, at 6 per round. In any case, Osinski and Winskowicz figured to capture through licensing agreements a swift and significant share of the hundreds of millions of dollars in increased industry profits this would generate annually.

Five years after quitting their jobs to pursue this initiative full time, they had spent three difficult years refining the technology and two frustrating years approaching golf ball manufacturers without securing a contract. In the middle of 2002, however, a number of events seemed to be coming together to take them to the next phase, to commercialization of their technology.

The Market for Golf Balls

National Golf Foundation statistics indicated that a total of 586 million rounds of golf were played in the United States in 2000, a figure that had grown at only a 1.6% CAGR over the previous decade. A total of 49.2 million dozen golf balls were sold in 2000. Total unit sales of golf balls had grown at

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Professor Kenneth S. Corts prepared this case. HBS cases are developed solely as the basis for class discussion. Cases are not intended to serve as endorsements, sources of primary data, or illustrations of effective or ineffective management.

less than a 4% CAGR during the 1990s, and were projected to grow at only 1%-2% over the coming decade.

Prices for new golf balls ranged from about $17 a dozen for well-known value-priced brands like Top Flite, to about $35 a dozen for popular premium brands like Titleist, on up to about $50 a dozen for the newest super-premium balls like Titleist's Pro V1. Golf balls remained the highest-margin item among all the categories of golfing equipment, surpassing shoes, clothing, clubs, bags, etc. The retailer gross margin was typically around 30% of the retail price, and the manufacturer's gross margin was around 63% of the wholesale price.

The U.S. Golf Association (USGA) specified the characteristics of legal balls within tight parameters. These restrictions on size, weight, materials, texture, etc., seemingly left little room for product innovation. In fact, the USGA regulations specified not just what went into a ball, but how it could perform, stipulating to within 10-20 yards how far the ball could travel when hit by a certain type of club traveling at a certain speed, all verified under controlled conditions with robotic testing equipment. Nonetheless, new product introductions were rampant in the industry, with slight changes in surface coatings and dimple patterns, for example, being touted for their ability to add a handful of yards to a golfer's shots, to give more accuracy, or to create greater control through faster spin on the ball. In addition, ball manufacturers spent millions of dollars on advertising campaigns for their balls.

There were three basic types of balls, all conforming to the same general specifications. The oldest technology still in use was the three-piece ball, which consisted of a core, windings, and a cover; this ball was good for spin and overall control. The second, and most popular, type of ball was the two-piece ball, which eliminated the windings of the three-piece ball; this ball produced more distance. The newest technology was the "solid core, multi-layered ball," which had taken the industry by storm in the early 2000s. This ball combined the spin and control of the three-piece with the distance of the two-piece ball.

Two firms accounted for half of new golf ball sales in the US. Acushnet, owned by Fortune Brands, marketed the Titleist and Pinnacle brands of balls and accounted for 43% of the market in 2000. Spalding, which had been acquired by KKR in 1998, made the Strata and Top Flite brands and accounted for 17% of balls. Bridgestone's Precept brand accounted for 11% of the market, as did the products of the Dunlop Maxfli Group, which was owned by British Tire and Rubber. Wilson, owned by the Amer Group of Finland, had about 4% of the market. A number of newcomers, including Nike, Taylor Made, and Callaway, accounted for the remainder of ball sales. All these firms had entered the ball business since 1999, though several had grown quite large in their first few years. **Exhibit 1** shows market shares by brand. Bridgestone manufactured Nike's golf balls. Taylor Made had originally made its own balls, but subsequently outsourced production to Dunlop Maxfli as part of a merger agreement that gave Dunlop Maxfli the option to buy the firm in the near future.

Used Balls

While new ball sales (49.2 million dozen x 12 balls per dozen = 590 million balls) totaled to almost exactly the number of rounds played (586 million), the average golfer lost between three and six balls per round, according to ball manufacturers. *Golf World* estimated the number at 4.5 balls per round, which would put the number of balls lost annually at 220 million dozen, or more than four times the number of new balls purchased annually. Clearly, a lot of golfers were not playing exclusively with new golf balls. Virtually every wooded area and every water hazard on a typical course stored many lost balls awaiting recovery by a later golfer. It was customary to pick up such balls; in fact, many golfers carried a special "ball retriever" device in their golf bag for the express purpose of scooping balls out of water hazards. Golfers often played balls they had found later in the round, especially on difficult shots that seemed likely to result in lost balls, like shots over water.

Increasingly, golfers also *bought* used balls. Historically, a golf pro might maintain a large bin of used balls loose for sale in a course's pro shop at less than half the price of a new ball. Used balls offered a golfer the opportunity to play a premium ball at a value price. When asked what brand of used ball they preferred, 49% consumers responded Titleist; however, Titleist accounted for only 31% of new ball sales.

The resale of used golf balls took off in the late 1990s, in part because new golf balls prices rose considerably, and in part because the internet made it easier for entrepreneurs to enter the market working from home. A number of companies began to retrieve, clean, recondition, and repackage used balls, selling them through the traditional golf retail channels, which included pro shops, off-course golf stores, and mass merchandisers. In addition, a number of new channels emerged, as drugstores, carwashes, and even roadside stands began to sell used golf balls. The online channel grew dramatically, from only a handful of web sites selling used golf balls in 1999 to over 100 sites in 2001. However, even after this surge, balls found by golfers during play, as opposed to those harvested by courses or companies, accounted for about two-thirds of used golf balls played by golfers.

In addition to selling "experienced" golf balls—used balls that had simply been washed—the burgeoning industry began to sell balls that had been extensively reconditioned. A *refurbished* ball had its outer layer(s) sandblasted off; after repainting, the refurbisher reprinted the "original" brand name back onto the ball. A *refinished* ball was cleaned chemically and physically and then had a fresh clearcoat applied over the old brand name. A *retreaded* ball had an entirely new cover put over the core of a used ball and was painted with a new brand name—the name of the ball reseller. Refurbished and retreaded balls sold for about $10-15 per dozen at retail, with the retailer earning about a 30% margin.

For all of these reconditioning processes, the primary raw material was of course the ball, and there were plenty of balls to be found. Advances in polymer chemistry had led to more and more durable coverings on balls, meaning that balls could stay in circulation for maybe five years on average without showing visible wear. At 50 million dozen new balls a year, that meant that 250 million dozen apparently undamaged used balls were out there somewhere; while some were lost for good, some were being found and replayed several times a year. Many were at the bottom of water hazards, where independent divers soon began to work retrieving balls by hand.

A single golf course could yield divers upwards of 100,000 balls per year. In fact, the water surrounding one infamous hole alone—the island green at the 17th hole at the Tournament Player's Club course at Sawgrass in Ponte Vedra Beach, Florida—yielded more than 120,000 balls a year. Despite the fact that the water hazards at many courses in Florida were alligator-infested, or that many courses in the desert Southwest used non-potable "recycled" water, there was no shortage of divers; over 1,000 were believed to be working in the United States in 2000. Divers would pay around 10 cents per recovered ball to the course, and then sell the balls to the reconditioning companies for 10-20 cents more.

The largest of the used ball resellers was Nitro Leisure Products, which also did business under the names of Second Chance and golfballsdirect.com. In January 2002, Acushnet, the manufacturer of Titleist and Pinnacle golf balls, filed suit against Nitro in U.S. District Court. According to the Acushnet press release, the complaint alleged "trademark infringement, trademark counterfeiting, trademark dilution, false designation of origin, patent infringement, unfair competition, false advertising, and product disparagement...." The same press release contained extensive quotes from Joseph Nauman, Senior Vice President and General Counsel of Acushnet:

> The Nitro remanufacturing process [when refurbishing balls] transforms Titleist and Pinnacle golf balls into products of inferior quality and performance which are so different that they are no longer, in our view, Titleist or Pinnacle golf balls. Nitro deceives the consumer by describing these golf balls as 'like new,' when in fact they no longer remotely resemble the original product. ... [When retreading balls,] Nitro grinds off a portion of the covers of genuine used Titleist and Pinnacle golf balls and then applies a new exterior cover layer, marketing the product as a new Nitro product, when the only new portion of the golf ball in its the exterior cover layer. This practice further deceives consumers and infringes Acushnet Company's patent rights.[1]

While the market for used balls grew dramatically in the 1990s, another source of lower-priced balls had virtually dried up. Up through the 1980s, it was common for manufacturers to sell "seconds" and overruns from their premium ball production into the market as "X-outs," meaning that X's had been stamped across the logo and brand name. These were sold in similar packaging to new balls, but at a significant discount, through the standard golf channels. Improvements in quality control and inventory management, as well as a simultaneous boom in the range ball business (balls sold directly to driving ranges with the logo either omitted or marked out in some way), virtually eliminated this source of balls by 2000.

Performance Indicator, LLC

Robb Osinski got his start as an entrepreneur as an undergraduate at Harvard, setting up a landscaping company that contracted to mow the lawns at Harvard Business School. Osinski spent his post-college years as an entrepreneur in banking and real estate, developing and running one of New England's largest small-property mortgage lenders until he left that firm in 1994 to pursue real estate and other investments full time. Bob Winskowicz had spent the first part of his career working in sales in consumer health care and cosmetics firms including Revlon, Alberto-Culver, and DEP. He had then worked at both MacGregor Golf and the Arnold Palmer Golf Company, eventually becoming senior vice president for Sales and Marketing at the latter.

Both Osinski and Winskowicz were golfers, and they were not strangers to used balls. In fact, Osinski himself had never bought a new golf ball prior to founding the company. They noticed that golfers tended to blame bad shots on a variety of different forces—various aspects of one's mechanics, one's state of mind, the weather, the condition of the course, or the golf club, but rarely on the ball. And they noticed an interesting paradox: while players seemed to pay great attention to the claims made by golf ball manufacturers regarding a ball's increased distance or straighter flight, the typical recreational golfer didn't think twice about picking up a used golf ball found on the course and playing with it. However, Osinski and Winskowicz believed that balls must suffer some performance degradation when they were submerged in water hazards for significant periods of time.

Soon the idea for the new technology was born: wouldn't it be great if the ball itself could tell you whether it was still as good as new? Winskowicz remembered an ill-fated product that served a similar purpose: a toothbrush containing a thermo-chromic dye that changed color after a certain period of time in the user's hand, indicating that the user had brushed his or her teeth for the amount

[1] *Acushnet Breaking News* for January 16, 2002: "Acushnet Company Files Pond Ball Lawsuit against Nitro Leisure Products."

of time recommended by the American Dental Association. (The product failed in part because children discovered alternative means of triggering the color change, like running the toothbrush under warm water to more quickly activate it.) An Oral-B toothbrush provided an even closer analogy: its blue bristles lost their color when the brush had been used so much that it required replacement. Drawing on his experience in consumer products, Winskowicz came up with the idea to incorporate color change technology to let golfers know when a ball's quality had been compromised.

Osinski and Winskowicz continued to kick around this idea, and talked to some patent attorneys about the possibility of patenting the idea. They had concluded some preliminary experiments by 1996, when *Golf Digest* ran a story entitled "Water, Water Everywhere," a study of the degradation of golf balls' performance after immersion in water. Osinski and Winskowicz felt that the time had come for their technology, and that if they did not act decisively soon, someone else would seize this opportunity. In the spring of 1997, Osinski and Winskowicz quit their jobs, funded Performance Indicator, LLC, from their personal savings, and pursued this idea full time. They were 34 and 36, respectively.

Osinski and Winskowicz first laid out for themselves a set of criteria that a chemical process would have to meet in order to be practical in this application. They then started down the dual paths of protecting their intellectual property and fine-tuning their process to satisfy these criteria.

Protecting the Idea

Shortly after quitting their jobs, they filed for their first patent in 1997, which was eventually issued by the U.S. Patent Office on October 20, 1998. This patent and additional ones that soon followed secured for Performance Indicator the exclusive right to employ any technology that would lead to a change in the appearance of a golf ball as a signal that its performance had been impaired by exposure to water. This included both the appearance of markings or colors and the disappearance of markings or colors.

They also set out to protect the idea by developing a brand. They developed their logo, which featured two swirls around a golf tee, and filed applications for trademark registrations for both this logo and the "Performance Indicator" name. In 2000, they hired the well-respected Mullen agency to compose print advertisements that could be shown to prospective customers (manufacturers). The basic Performance Indicator licensing plan required a certain amount of funds go to cooperative advertising that would explain the Performance Indicator concept and use both the Performance Indicator name and the manufacturer's brand name. **Exhibit 2** contains examples of such ads. In 2001, Mullen proceeded with the development of an informative web site that provided animated demonstrations of the performance of used balls and featured the slogan, "If it's gray, don't play." (See <www.performanceindicator.com>.)

Developing the Idea

Just prior to quitting their jobs, the founders began to work with a professor at MIT who specialized in polymer engineering. They engaged the professor to conduct a review of patent documents and the engineering literature, with the expectation that an off-the-shelf process could be bought or licensed to enhance the base technology protected under Performance Indicator's patents.

No off-the shelf technology satisfying all the criteria needed for a commercially viable ball could be found, however. One of Performance Indicator's technology consultants had developed another promising chemical treatment that would cause color change after immersion in water; the problem with that technology was that it worked only in water much warmer than that in a typical golf course water hazard. Thus, in 1998 the founders turned to the Batelle Memorial Institute (BMI), a world-renowned independent contract research organization that had played a key role in the development of technologies as diverse as xerography, the compact disc, and the bar code. BMI initially worked to enhance the chemical process, focusing on transport rates in order to meet the criteria laid out by the partners. After seven months, the BMI scientists had hit a dead end. However, managers at BMI were sufficiently intrigued by Performance Indicator's idea to offer to continue working on the project under an arrangement where BMI itself would fund the research, with Performance Indicator having access to any successful technological developments.

In May 2000, BMI finally succeeded in delivering a prototype that met most of Performance Indicator's criteria. A chemical added to the outer shell of the ball would turn the entire surface of the ball dark gray upon four days of submersion in water. The golf ball's original logo, brand name, and other markings would still be visible. BMI retained the patents on the chemical technology itself, while Performance Indicator had exclusive rights to its use in golf balls. The agreement stipulated that Performance Indicator would pay BMI a small fraction of its revenues as a licensing fee, but only up to a cap that the founders expected to meet within one to two years of commercialization of the technology.

Performance Indicator's marketing materials described BMI's technological breakthrough this way:

> Performance Indicator's patented Color Change Technology turns a golf ball permanently gray once it's been immersed in water for too long a time. The technology is based on a water-mediated reaction that brings together two separate, colorless components that, when combined, form the gray color. The process is impervious to the effects of casual water, maintaining its stability in rainy or humid conditions and differentiating those conditions from the hydrostatic pressure and tension that come with extended immersion.
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> The color change is irreversible, making it impervious to attempts by used ball companies to "wash" compromised balls through the use of acid, oxidizers or bleaching agents. More significantly, the technology has no impact on flight performance since it uses a low additive that is incorporated at the compounding or injection-molding step of golf ball production.

Performance Indicator's technology was easy and cheap to incorporate into golf ball manufacturing processes. The outer covering of a golf ball was made by a plastic injection molding process that blended several types of pelletized resins from a number of hoppers. The Performance Indicator technology could be incorporated by simply mixing (or "master-batching") a combination of widely available chemicals into the resins contained in one of these hoppers. The cost of the raw materials required to implement the Performance Indicator technology was estimated at about one-tenth of one cent per ball. Those costs would be borne by the manufacturer. The only direct cost to Performance Indicator would that of establishing a small quality assurance program at each manufacturing facility that used the technology. This would be outsourced to a consulting firm for $25,000-$50,000 per year per plant. Most golf ball manufacturers had only one or two plants.

Selling the Idea

As BMI worked to develop the technology, Osinski and Winskowicz worked to develop a compelling business case to present to the golf ball manufacturers that they hoped would eventually employ their technology. One of the key challenges turned out to be a fundamental one: convincing manufacturers that used balls were a problem. Osinski and Winskowicz repeatedly asked industry groups what they thought the total demand for golf balls was. The audience always responded about 50 million dozen, the annual sales of new balls, and would be shocked when eventually convinced that golfers were putting something closer to 150-300 million dozen balls in play per year (3-6 balls per round). **Exhibit 3** shows one way of estimating the impact of the Performance Indicator technology on the used ball market. Under the assumptions used there, every dozen balls incorporating the Performance Indicator technology (annually) would eliminate 1.7 dozen balls from the used market annually. This number could be greater than one since a single ball could be lost and found (or bought) several times, being replayed more than once.

Osinski and Winskowicz enlisted well-known market research firm Harris Interactive to conduct online consumer surveys to learn more about consumers' golf ball purchasing habits. Mullen, Performance Indicator's advertising agency, supplemented this with consumer focus group studies and interviews of consumers at golf shops. Osinski and Winskowicz also recruited a number of golf industry insiders to join the polymer and chemical scientists on their advisory board, hoping to gain insight into how the manufacturers, golf pros, and other constituencies would respond to this idea. **Exhibit 4** lists the membership of the Performance Indicator advisory board.

Early on, the market research revealed that golfers were extremely confident in their ability to assess whether a ball they found on the course had suffered performance degradation. Most believed that a ball would be discolored, scuffed, or otherwise damaged in a way visible to the naked eye if it had been subjected to enough punishment to be have had its performance diminished. During the 1980s and 1990s, however, advances in the durability of ball coverings had made balls virtually indestructible, so that they did not scuff or cut as had previous generations of balls. However, consumers retained tremendous confidence in their ability to visually assess a ball's quality.

Osinski and Winskowicz set out to convince golfers and ball manufacturers that this was not the case—that in fact water-damaged balls might not show visually discernible damage but nonetheless suffer significantly in performance. The *Golf Digest* study that led them to quit their jobs had found that balls lost six yards after one week in the water, 12 yards after three months, and 15 yards after six months. Another test by Golf Laboratories, Inc., in 1999 tested used balls that were actually purchased through retail channels rather than "aged" in the lab. This study found a loss of distance of up to 24 yards depending on the brand. Osinski and Winskowicz contracted the U.S. Army's Research Laboratory to conduct further testing, which established that balls do absorb water when submerged, that this affects basic physical characteristics like the coefficient of restitution (springiness), and that these changes were irreversible. When this evidence was presented to those same focus groups of golfers, the golfers expressed strong interest in anything that could help them separate the good balls from the bad. Twenty-four yards was an enormous number in their view, and even six yards was large enough to get their interest.

The Performance Indicator technology led to color change only in those balls that had been submerged in water long enough to affect the ball's performance. Consequently, used golf balls would still be available to consumers, albeit in smaller numbers. Osinski and Winskowicz wanted to know what sort of ball golfers would purchase if the adoption of the Performance Indicator technology made it harder to find used golf balls of his or her preferred brand. An on-line survey of qualified golfers conducted by Harris Interactive suggested that about 60% would buy a new ball, while 40% said they would play a used ball of a different brand. **Exhibit 5** shows one way this data could be used to estimate the financial impact of the Performance Indicator technology. The baseline case indicates that each dozen balls incorporating the technology annually would be worth $13.10 in operating profits to the firm.

Armed with their research on performance degradation and on consumer buying behavior, Osinski and Winskowicz set out in the middle of 2000 to approach golf ball manufacturers with a proposal to license their technology. Their business plan documents laid out three alternative ways to capture the value of their technology: "(1) licensing to the new golf ball manufacturers, (2) exclusively licensing to one strategic licensee who will use the technology as a competitive advantage or sub-license to the rest of the industry, or (3) outright sale to a strategic acquirer." Osinski and Winskowicz chose to pursue the first option, believing that this should be an industry-wide solution to an industry-wide problem. They offered manufacturers a basic licensing fee of $0.06 per golf ball, with additional provisions for advances on royalties, minimum payments, and contributions to cooperative advertising.

Dunlop Maxfli Osinski and Winskowicz chose to meet with Dunlop Maxfli first, largely because a close personal friend worked in manufacturing there. In May of 2000, they had an encouraging meeting with six representatives of R&D and Operations, including the vice president of R&D. This group believed the technology was workable, acknowledged the problem of performance degradation, and recognized the magnitude of the used ball market and its impact on new ball sales. They committed to further pursue the concept internally, particularly with the firm's marketing team. Osinski and Winskowicz were quite pleased with the meeting, especially with the vice president's enthusiasm for going ahead with the project.

The R&D vice president promised to arrange for the Performance Indicator team to meet the head of marketing and other senior executives. However, this meeting did not take place until the fall of 2000. In that second meeting, Osinski and Winskowicz discovered that, despite believing in the fundamental logic of the proposal, the firm was not particularly interested in pioneering the technology. Three questions seemed to dominate the firm's thinking. First, what might Titleist (the market share leader) do to counter-market against Maxfli's potential adoption of this technology? Second, how would consumers respond—would they see this as an improvement to the quality of their game, or as an infringement on their access to cheap used balls? Third, what would be the ramifications of having their golf ball turn gray—how would the consumer feel about the brand when he or she found a gray ball with the firm's name on it?

Osinski and Winskowicz shared additional market research data in subsequent meetings, but were unable to sufficiently allay these fears about consumer acceptance. In addition, the firm's resources and management attention were taxed by a number of other projects: pursuing a proposal to sell the firm to Taylor Made, defending the firm in a lawsuit filed by Callaway, and prosecuting a lawsuit against Wilson.

Osinski and Winskowicz perceived Dunlop Maxfli to be a friend of Performance Indicator. In a meeting held in January 2002, Maxfli confirmed their strong support for the technology and belief in the value proposition. In addition, they expressed a desire to proceed with testing of the technology in order to be prepared to adopt the technology immediately when one of the two market leaders did so.

Bridgestone Within a couple of months, Osinski and Winskowicz flew to Japan to make their pitch to Bridgestone, who sold golf balls in the United States under the Precept brand and also manufactured all of Nike's balls. This meeting was frustrated by language problems, but in the end it seemed that the firm had little interest in taking the initiative on this technology, and would wait to see what Titleist and other leading U.S. firms did. Bridgestone was somewhat more interested in the idea of adopting the Performance Indicator technology in the Japanese market, where they were one of the two dominant firms. However, they were again very concerned about what the other leading firm—in this case, Sumitomo Rubber—was planning to do.

Titleist In July 2000, Osinski and Winskowicz met with the top marketing executive at Titleist, who was immediately won over by Performance Indicator's idea. He worked to build consensus in the firm and continued to keep in touch with Osinski and Winskowicz, occasionally requesting additional materials to present to other managers. A second meeting was scheduled for December 2000. Osinski and Winskowicz brought a lawyer from Hale and Dorr, two advertising executives from Mullen, and two scientists from BMI to make a comprehensive presentation to a top management team, which included the general counsel of Fortune Brands (Titleist's ultimate parent company) and Titleist's EVP of Operations (who oversaw R&D and manufacturing), as well as several other top executives. Osinski and Winskowicz left the meeting very optimistic and enthusiastic about the reception they had received. The meeting ended with a commitment to convene Titleist's "ball committee" to agree on next steps before the January 2001 PGA trade show.

In winter 2000-2001, Titleist launched a new line of balls—the Pro V1—which incorporated the new "solid-core, multi-layer" technology. Sales immediately skyrocketed, outstripping Titlesist's production capacity. Worse yet, the multi-layered construction, which was also introduced by other manufacturers, became very popular, so that consumers were not shopping within the Titleist family when the Pro V1 was out of stock. Retailers, not wanting to lose a high-margin sale, were directing consumers to other brands with similar multi-layered technology. Thus, the success of this product introduction was paradoxically catastrophic for the firm's core brand, Titleist, as Pro V1 became effectively its own brand. These difficulties delayed any plans to deal with an innovation like Performance Indicator's technology.

Not until early 2002 were Titleist and Performance Indicator back in frequent communication. The Fortune Brands general counsel was now the primary contact, in part because he was very interested in using Performance Indicator's research in the firm's lawsuit against Nitro. He continued to express enthusiasm for the eventual adoption of the Performance Indicator technology and requested that Osinski and Winskowicz provide additional information on several distinct issues. He narrowed these into four categories: the size of the used ball market and the portion of those potential sales that would be captured by Acushnet if they adopted the technology; the cost and performance implications of the technology for the manufacturing process; consumer reaction to the technology; and the financial details of the licensing agreement.

Spalding Osinski and Winskowicz met with the vice president of R&D at Spalding in late summer 2000. While the R&D staff expressed some initial interest, consideration of Performance Indicator's technology did not seem to have much priority for a full year. However, in the early fall of 2001, Osinski and Winskowicz met with the head of marketing for golf balls and a number of other executives, who fell in love with the Performance Indicator idea. The head of marketing, in particular, became a champion of the technology within the firm. He made it clear that the firm was extremely excited about the technology, but that restructuring within the firm made it difficult to move ahead quickly.

Despite yearly increases in sales and operating profits, the firm continued to experience financial difficulties related to the debt burden from the KKR acquisition. This put the firm into a cost-cutting and downsizing mode, where innovations like Performance Indicator's were pushed to the back burner. The head of marketing managed to arrange for Osinski and Winskowicz to make a presentation to the executive vice president, who expressed a strong desire to move the project forward. However, ten days later he was fired. Within weeks, the news broke that the firm's financial difficulties had reached a true crisis, and that negotiations to restructure the capital structure were under way.

In January 2002, one of the large debt-holders agreed to a debt-for-equity swap that alleviated short-run financial pressure on the firm. On the last day of April 2002, the final debt-holder had signed on to a restructuring plan, and the firm was again free to focus on operations rather than finances. The CEO, who had been informed about Performance Indicator's technology by the marketing staff, was extremely interested in meeting with the Performance Indicator team, expressing only a concern regarding premature color change. Osinski and Winskowicz found this extremely promising since Spalding had historically been unafraid to pioneer new technologies. Spalding had been the first to introduce two-piece balls, the first to introduce multi-layered balls, and the first to use urethane outer layers.

Other firms Over the course of 2000 and 2001, Osinski and Winskowicz talked to representatives of many of the remaining ball manufacturers, including Taylor Made, Wilson, Nike, and Callaway. None seemed interested in pioneering the technology, though all felt the basic premise was sensible. Wilson expressed concern that the ball might prematurely color in wet climates. Nike worried about undermining the "free trial" effect that used balls have on capturing customers for a smaller brand. Callaway viewed the technology as a tool for quality assurance—that is, as a way of protecting the consumer from playing a less-than-perfect Callaway product. However, before moving forward, they wanted to better understand the effects of water on the performance of their brands by conducting additional research of their own.

In general, Osinski and Winskowicz observed that there was little sense of urgency on the part of any of the manufacturers, large or small, around the adoption of the Performance Indicator technology. Management from all of the companies seemed to be constantly fighting fires in manufacturing or marketing—scrapping for market share, trying to meet the expectations of Wall Street, and launching new SKUs within existing product lines—leaving little time or attention for the consideration of a radical new technology like that of Performance Indicator.

The press Osinski and Winskowicz waged a tireless campaign to educate the industry, through discussions with the press and meetings with retailers and golf pros, as well as through the individual meetings with manufacturers. This effort began to pay off, with industry interest spurred in part by the Nitro lawsuit, as the used ball problem garnered extensive coverage in industry magazines in 2002. *PGA Magazine*, with 30,000 readers who mostly worked as pros at golf courses, had run an extensive article on used balls in its April 2002 issue, with a sidebar detailing the Performance Indicator idea. *Golf Digest*, with a readership of 6,000,000 golfing enthusiasts, was set to run an article on Performance Indicator in its June 2002 issue.

The Dilemma

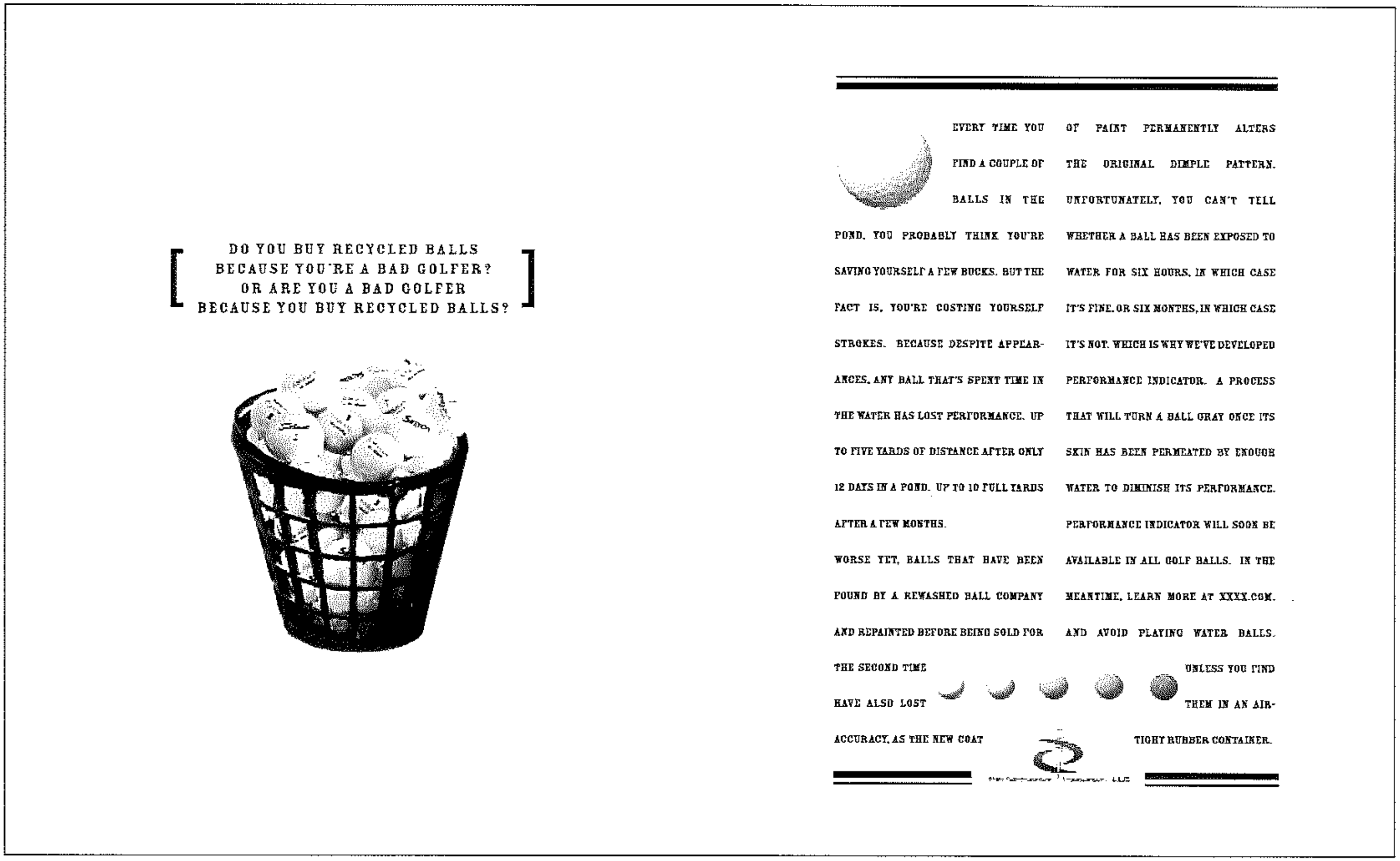
In the middle of 2002, Osinski and Winskowicz found themselves in a peculiar position. They had clear legal ownership of an idea that industry participants largely acknowledged would increase industry profits by hundreds of millions of dollars a year. Nonetheless, in their five years since quitting their jobs, they had yet to book a single penny in revenue. Funds and patience were wearing thin as Osinski and Winskowicz sat down to work out their next steps.

Exhibit 1 Volume Market Share by Brand

	Share of Total Market	Share of Segment
Premium		
Titleist (Acushnet)	31.1	46.1
Precept (Bridgestone)	11.1	16.5
Maxfli (British Tire and Rubber)	8.4	12.5
Nike	6.6	9.8
Callaway	5.2	7.7
Strata (Spalding)	3.1	4.6
Slazenger (British Tire and Rubber)	1.3	1.9
Taylor Made	0.6	0.9
	67.4	100.0
Value		
Top Flite (and other Spalding)	14.2	43.6
Pinnacle (Acushnet)	11.4	35.0
Wilson	4.1	12.6
Various other	1.8	5.5
Dunlop (British Tire and Rubber)	1.1	3.4
	32.6	100.0

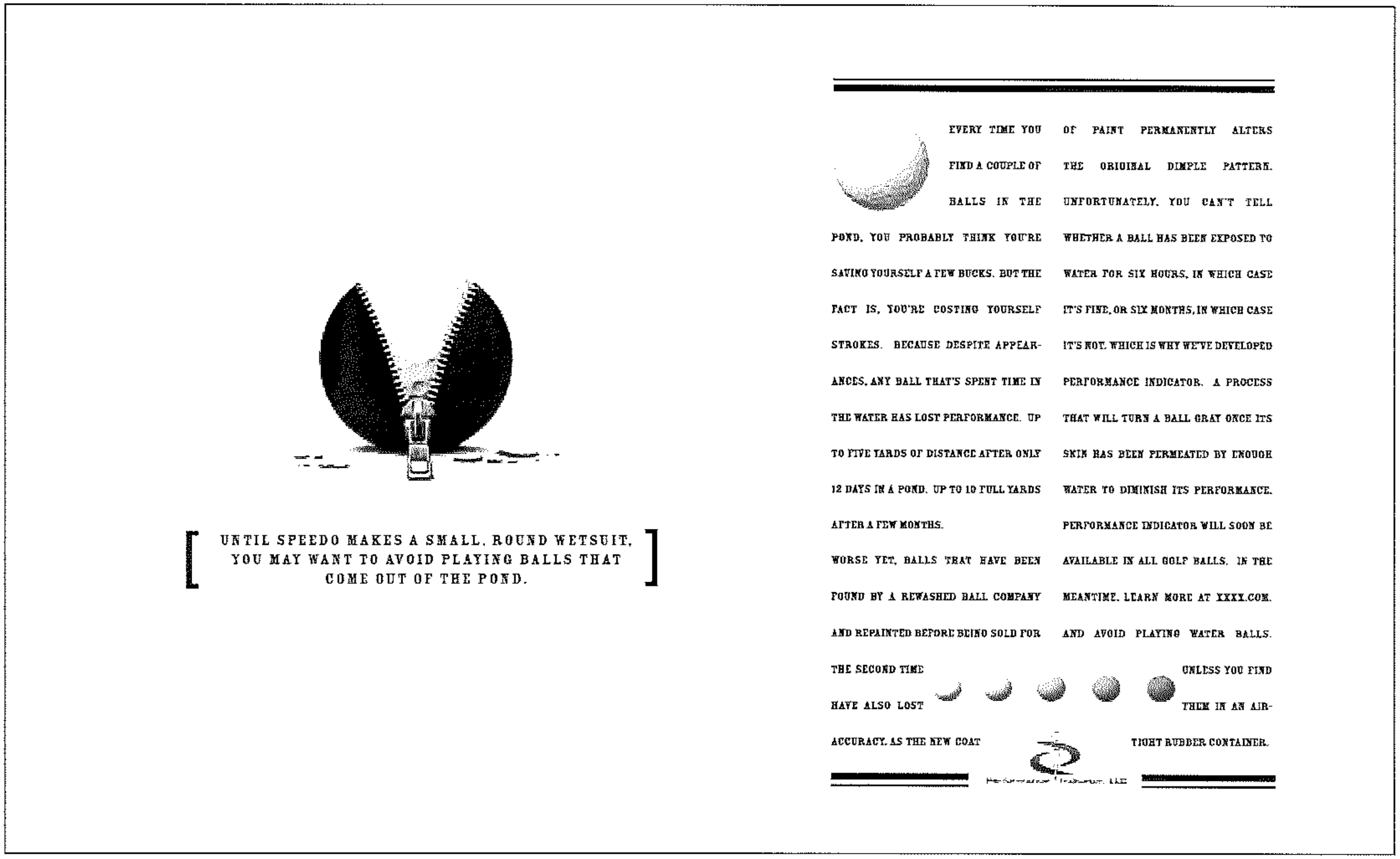
Source: Created by casewriter from data provided by Performance Indicator.

Exhibit 2 Sample Print Advertisements



Source: Performance Indicator.

Exhibit 2 (continued)



Source: Performance Indicator.

Exhibit 3 Estimation of Impact on Volume of Used Balls

Line		
1	Rounds of golf played (millions)	586
2	Number of balls lost per round	4.5
3	Total number of balls lost (line 1 * line 2 / 12; millions of dozens)	219.8
4	Less: total sales of new golf balls (millions of dozens)	-49.2
5	Total found or bought used balls played (millions of dozens)	170.6
6	Estimated proportion of used balls suffering performance degradation due to prolonged submersion in water hazard	0.5
7	Total balls potentially removed from circulation by PI Technology (line 5 * line 6; millions of dozens)	85.3
8	Ratio of line 7 to line 4 This represents how many dozen used ball "finds" or used ball purchases would be eliminated (annually) for every dozen new balls that incorporated the PI technology (annually). This number can be larger than one because each used ball could be bought or found more than once.	1.7

Source: Performance Indicator documents and casewriter analysis.

Exhibit 4 Performance Indicator's Advisory Board

THE PERFORMANCE INDICATOR TEAM

Managing Partners	Robb J. Osinski and Bob Winskowicz
Strategic Development Partner	Battelle Memorial Institute
Legal and Patent Counsel	Hale and Dorr, LLP Peabody & Arnold, LLP
Advertising & Marketing Agency	Mullen

Board of Advisors

Robert Molitor	*Retired VP of R&D-Spalding Sports Worldwide*
Patrick J. Rielly	*Past President-PGA of America*
Dan Cahill	*Former General Manager and VP of Operations-Ben Hogan*
Donovan Prewett	*Former Polymer Chemist-Maxfli*
Paula Hammond	*Professor (Polymer Science)-Massachusetts Institute of Technology*
Howard Stone	*Professor (Applied Mechanics)-Harvard University*
Frank Meneghini	*Organic Chemist; Retired VP of R&D-Markem Corporation*
Robert Charvat	*Consultant (Colorants and Dyestuffs); Fellow-Society of Plastics Engineers; Retired VP-Engelhard Corporation*
Larry Tashjian	*CEO-Provident Investment Counsel; President-Annandale GC*
William Anderson	*EVP & General Counsel-Topa Equities, Inc.*

Source: Performance Indicator.

Exhibit 5 Estimation of Profit Impact

Line		
1	Number of dozens of additional balls purchased (ratio from previous table)	1.7
	Fraction of these sales that become:	
2	New premium balls--67.4% (from Exhibit 1) of 60% (from page 7)	0.404
3	New value-priced--32.6% (from Exhibit 1) of 60% (from page 7)	0.196
4	Used balls	0.400
	Gross profit to firm per dozen new premium balls:	
5	Retail price	35.00
6	Retailer profit @ 30%	10.50
7	Wholesale price (line 5 minus line 6)	24.50
8	Manufacturer gross profit @ 63% of wholesale price	15.44
	Gross profit to firm per dozen new value-priced balls:	
9	Retail price	17.00
10	Retailer profit @ 30%	5.10
11	Wholesale price (line 9 minus line 10)	11.90
12	Manufacturer gross profit @ 63% of wholesale price	7.50
13	Gross (annual) profit per dozen balls employing PI technology (annually)	
14	from new premium balls (line 1 * line 2 * line 8)	10.61
15	from value-priced balls (line 1 * line 3 * line 12)	2.49
16	Total	13.10

Source: Performance Indicator documents and casewriter analysis.