Storage Operations in a Salt Mine

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ABSTRACT

First, arrive at a definite performance of a needed service; then, make careful analysis of existing competitive facilities -- their advantages and disadvantages.

In evaluating a mine for storage consider:

Depth of mining levels -- for cost of getting materials to and from storage may make competitive rates impractical;

Conditions of available space -- ceiling, floor, walls, and columns must be stable. Adequate, easily circulated, and non-polluted air supply is essential. Inherent temperature and relative humidity should be compatible with items to be stored;

Geographical location -- if bulk storage contemplated, relationship to producer and ultimate market is highly important. If security storage contemplated, isolation from enemy targets as established by Federal Agencies is mandatory;

Cohabitation -- storage operations in an active mine require much pre-conditioning of mining management and personnel. Conflicts of purpose and use of existing facilities can create insurmountable problems;

Construction and comfort -- can be readily attained with proper care and planning. The earth's inclination to "heal" itself, and the human's discomfort underground, can be offset by good engineering, lots of whitewash, and clever lighting.

Investment and return -- underground storage is a new business and requires both money and patience in copious quantities. Carefully selected professional management should meet expenses in the third or fourth year of operation.

INTRODUCTION

Early in 1959 a prominent Wichita, Kansas attorney was impressed by the forward planning of several progressive firms toward surviving a natural disaster as well as a nuclear attack on the United States. Though several phases of their planning -- such as management succession, sheltering of personnel, and assignment of post-attack responsibilities -- seemed to have resulted in conclusive action, there was still a missing link in corporate survival. What steps could be taken to guarantee the availability of vital corporate records? Insure them? Duplicate and disperse them? Duplicate and deposit them in a bank vault? Create their own vital records protection facility in a cave, cellar, or other sheltered area? None of these answers met the criteria of sure availability, professional and confidential care, or economy as recommended by the Office of Civil and Defense Mobilization (now the Office of Emergency Planning) and other government agencies.

Further investigation revealed to our Kansas attorney that beginning in 1949 three firms had established underground facilities and services to perform this records protection function. The first in New York State had chosen an abandoned iron ore mine; the second in Pennsylvania, an abandoned limestone mine; and the third in California, an abandoned railroad tunnel under a mountain Southeast of San Francisco. However, nowhere in the great and growing middlewest or middle United States was there such a facility which could -- by reason of a volume operation -- provide the area with records which could be recovered after a nuclear attack to: (a) reestablish its asset and liability position, and (b) resume its relationships with customers. Shortly thereafter Underground Vaults and Storage, Inc. was founded and the incorporators started studies of available underground areas in which to establish a Records Security facility.

At this point in our discussion it should be noted that Underground Vaults and Storage, Inc. was not founded to utilize the mined out spaces created by the mining of rock salt. It was only after careful analyzations of many other available underground areas that the present location was chosen. I must also warn that not all rock salt mines can be suitably adapted to records or other storage operations. Many conditions and considerations must be carefully weighed before attempting to begin such an operation. These conditions and considerations will be frankly and honestly reviewed herein.

DEPTH OF MINING LEVELS

In any storage operation -- whether it be common bulk commodities or volumes of security copies of Vital Records -- material must be delivered to its assigned storage location underground and eventually returned to a dispersal point aboveground. In the utilization of salt mine space, therefore, the factor of foot pounds of lift and distance of travel to and from the underground level is an immediate and constant item of expense. Therefore, it follows that this item (which we will call "delivery") would be more expensive in a mine with a shaft depth of 1, 600 feet than in the Carey Salt Company depth of 648 feet, near Hutchinson, Kansas. Elevator equipment cost and maintenance, power consumption, travel time involving labor, all contribute to "delivery" cost. Proximity to postoffice, express office, truck terminals, and other points of arrival for incoming materials is another factor in the cost of receiving, handling, and storing such materials in the underground area. Like the air-conditioning business, the underground Records Security storage business (since its infancy) has been highly competitive on a national as well as a regional basis. The reason is quite simple. Records Management experts have proven that only 1 to 5% of the records of any private business are essential or vital to the reconstruction of that business. So, coupled with the relatively small volume involved, we have the philosophy that there is added safety in having records stored considerable distance from the originals. A commercial bank doing business in California -- for instance -- would feel that they would gain more security from an underground security copy stored in Kansas or Pennsylvania, than in an equally qualified facility in California.

CONDITION OF AVAILABLE SPACE

It is common knowledge that salt recovery methods and the resulting open spaces, vary greatly from operator to operator -- even from mine to mine under the same management. You will see mines with ceilings a hundred feet high, caved in roofs, floor upheavals, slacking columns, and mines with standing water. Others are bothered by noxious gases or lack of adequate ventilation. None of these conditions are compatible with the storage business. Though most salt mines are blessed with fairly stable temperature and relative humidity, the relationship between the two is very important. Duplicate records taking the form of microfilm, magnetic tape or aperture cards are all subject to rapid deterioration or even oblivion unless atmospheric conditions can be controlled mechanically, or are naturally inherent and existent. If artificial controls of temperature and relative humidity are necessary to comply with the recommendation of the microfilm, data processing, or other technical experts who should be consulted, then provision must be made to operate such equipment independently of ground level power sources for a minimum of thirty days. Be assured that appearances and impressions reflected by the underground area are very important. Few major clients will commit such important functions to any facility without first making a personal inspection. Most individuals are inherently nervous when

visiting in a mine for the first time. Therefore, it is necessary to reflect safety, solidity, and comfort to them from the beginning of descent until they are back in the sunshine.

GEOGRAPHICAL LOCATION

At first blush it might seem feasible that the ideal location for a Security Storage operation would be near the mass market -- the financial centers. Here again, there are numerous philosophies and trends of speculation. In this age of thermo-nuclear irresponsibility the designation of a safe place hinges on popular opinion to a degree. There is much speculation on how the enemy would go about most drastically crippling the United States. Would he first assign his warheads to military installations? Would he consider industrial centers most strategic? Perhaps he would strike at the highly populated financial centers first -- reasoning that this would best disrupt our retaliatory efforts and post-attack reconstruction. On that basis New York City, Chicago, Philadelphia, and Los Angeles would probably be first on his list. It is well to decide how your mine location measures up to the speculation of a "direct hit" or a "near miss" intended for one of these three general target areas. It is certain that the prospective client will measure you on these counts.

COHABITATION

This paper drew a previous comparison between air-conditioning and security storage from the standpoint of starting in a highly competitive business atmosphere. Like air-conditioning, the market sales for rock salt are highly seasonal at best. The cheapest storage warehouse for salt is underground -- in the vein -- thus, historically, more if it must be removed in the short winter months, customers are impatient, and salt producers are most reticent in terms of sharing skip time, power supply, and living with the storage business in general. Unless you have had the experience of convincing a bank president that he must wait until a given hour to descend to your hallowed underground, held him until a certain hour to ascend into the sunshine because salt must be sold when it can be sold, you cannot appreciate this part of the discussion. Storage personnel learn to operate from midnight until dawn, if necessary, under favorable salt market conditions. They learn to cheerfully accept the responsibility for everything that disrupts the recovery of rock salt, because salt miners operate under the extreme pressure of a short seller's market and salt purchasers often demand delivery in the same period of time with protection from delivery penalty clauses. So these two families -- rock salt mining and security storage operations -- must realize from the very beginning that this is a strange and unique marriage, demanding more patience and understanding than prudent planning.

UNDERGROUND COMFORT AND CONSTRUCTION

Pioneering the creation of offices, living quarters, private vault, and isolated private security areas in a rock salt mine has been a real challenge. Needless to say, there are many things that you just do not do in construction. Fireproof vaults must be air tight but the overburden movements have little respect for steel reinforced concrete block walls. Undercut floors require some medium for leveling -- to bear rows of steel shelving, office furniture, microfilm and magnetic tape storage drawers and cabinets. The perfection of "saltcrete" in which we substitute salt for sand has been both a cost reduction and an improvement over the beginning practice of using regular concrete. The white-washing of walls for cleanliness and proper light reflection took some experimentation -- as did the movement of air to dispose of and control the corrosive effects of moisture introduced in saltcrete and whitewash operations. The matter of a fire alarm and control system which cannot tolerate sprinklers is an interesting problem. Since water is a greater enemy of records than fire itself, one must depend on alarms coupled with powder extinguishers and the ability to shut off air and oxygen fast enough to limit any damage. Furthermore, much care must be taken to see that all security spaces are designed to use fireproof materials such as steel for shelving, film storage, magnetic tape storage, partition studs, etc.; transite partitions, and saltcrete floors; and electrical installations that would meet the most rigid city inspections.

INVESTMENT AND RETURN

By the time our salt mine security facility was completed we had about $100,000 invested. Along with heavily barred gates and fences for security, you will have storage equipment, living quarters for storage personnel during emergency, fully equipped photographic laboratory for enlargements and photo prints, microfilming printers and readers, private vaults for highly concentrated tape and film records, fire alarm and control system, and comprehensive procedure for the control of records locations so as to guarantee retrieval, etc. This beginning investment will be much higher if mechanical equipment is required to control temperature and relative humidity. The minimum operating expense from opening day will be about $35,000 per year assuming that announcement and promotional material can be included in the first investment figure. Continuing promotion such as publicity, direct mail, and direct sales contact is very necessary to the establishment of a reputation in this field regardless of the perfection of the facility. Concurrently, a sales staff must be selected, trained, and educated in the field of Records Management. These sales people connot be ordinary order-takers: they must be qualified to advise the prospect on the most efficient and inexpensive methods of preparing duplicate records, the frequency with which they should be updated, length of retention -- all of which varies with the type of business involved and with state and federal laws. Good sales tools -- such as facility and service photography, testimonial letters, favorable trade journal and news service articles -- must be tied together to convince the prospect that you are capable and equipped to furnish him the best available security and service.

Underground Vaults and Storage, Inc. started facility preparation on August 3, 1959. Its formal opening, combined with a Records Management and Vital Records Protection Symposium, was held in mid-January of 1960. Sales planning and promotion were finished and the first sales year set to begin April 1, 1960. At the end of March, 1961 -- its first full sales and operational year -- Underground Vaults and Storage, Inc. had actual storage contracts producing an annual income of slightly under $2,000. This past March 31, 1962 we completed our second fiscal and sales year with storage contracts sufficient to produce an annual income of $25,000. We are optimistic that the year in progress will see Underground Vaults and Storage, Inc. meet its expenses for the first time; however, in the meantime the number of firms (at last count) offering underground security storage for Vital Records has grown to 14 from the 3 that were in business when we began. I am personally convinced that rock salt mine space has many other storage possibilities greater than in the Records Security field. We now know most of the problems; unfortunately, we do not know all the solutions.