ATTACHMENT 10

SANTA ROSA PLANT
LEAK DETECTION AND ELIMINATION PROGRAM

Title V Renewal Application
Sterling Fibers, Inc. (Facility ID #1130003)
Pace, Florida

Sterling Fibers, Inc. (Sterling Fibers, previously known as American Cyanamid) is a manufacturer of specialty fibers located in Santa Rosa County near Pensacola, Florida. The Santa Rosa plant manufactures acrylic fiber (Standard Industrial Classification code 2824) by reacting vinyl acetate (VA) co-monomer with acrylonitrile (AN) monomer to produce an acrylic polymer. This polymer is purified, dissolved in an aqueous inorganic solvent, and processed to produce an acrylic fiber. Various dyeing and mechanical processing steps are included as needed to produce fiber meeting various customers' specifications. The facility includes nine emissions units, three of which include equipment used in the utilization of AN.

Florida Department of Environmental Protection (FDEP) rule number 62-296.413 (1) (g) 6, Florida Administrative Code (FAC) requires that acrylonitrile emissions due to leaks from equipment used in acrylonitrile utilization be minimized by implementing a formal leak detection and elimination program. The owner or operator is required to submit a description of the program to the Department for approval. The rule specifies that the program shall include the routine use of a reliable and accurate portable hydrocarbon detector to find small leaks, provide for an acceptable calibration and maintenance schedule for the portable hydrocarbon detector, and include at least a weekly survey of all representative facility locations or areas containing equipment used in the formation or utilization of acrylonitrile which may leak acrylonitrile.

The original Leak Detection Program Plan was submitted to the FDEP (formerly known as the Florida Department of Environmental Regulation, FDER) in September 1989. The Plan was revised per the Department's comments and resubmitted in March 1990. The Department subsequently approved the Plan and the facility has implemented the provisions of the approved plan since that time.

This document presents a proposed modification to the long-standing plan to better reflect current operating parameters for the Santa Rosa Plant and to allow the facility certain flexibilities. The facility conducts a weekly plant survey to determine if any components in acrylonitrile service are leaking. Sterling proposes to continue to conduct weekly surveys while the plant is operating. However, during weeks that the plant is shutdown and not operated, Sterling Fibers asserts that the survey need not be conducted. Sterling also proposes that the facility be granted the flexibility to omit the survey monitoring areas for equipment that is out of service for the week that the survey is being conducted.

BASELINE LEAK DETECTION SURVEY

Sterling Fibers conducted a baseline leak detection survey of the Santa Rosa plant in 1990. The survey was conducted to estimate the baseline fugitive emissions from the facility equipment (i.e., pumps, valves, flanges, connections, and other fittings) utilized in acrylonitrile service. The facility components surveyed in the baseline survey included 27 pumps, 327 valves, 1,331 connections, and 111 open-ended lines for a total of 1,796 components in acrylonitrile service. This baseline survey established a fixed emission rate of 1.25 pounds AN per hour of operation for fugitive emissions from these components in acrylonitrile service.

LEAK DETECTION PROGRAM

The Leak Detection Program is implemented for the determination of acrylonitrile leaks from process equipment utilized in acrylonitrile service. The objective of the program is to identify leaks in a timely manner such that repairs can be made so the baseline emission rate remains representative of fugitive emissions from source components at the plant. Source components include valves, flanges, connections, pumps, compressors, pressure relief devices, process drains, open-ended valves, seals, and vents. The program includes a facility survey, equipment repair (as necessary), and recordkeeping requirements.

Plant Survey

The plant survey is conducted to determine if any components in acrylonitrile service are leaking. The Survey will be conducted weekly while the plant is operating. During weeks that the plant is shutdown and not operated, the survey will not be conducted.

Survey Areas

The facility areas the Survey is conducted in include the rail loading station, acrylonitrile storage tanks, A-I reactors (lower level), A-I process (lower level), A-I reactors (upper level), A-II reactors (upper level), A-II reactors (lower level), and A-II process (lower level). A total of 64 survey points are utilized in the Program. Maps of the areas surveyed, which include the 64 survey points, are attached. Sterling proposes that the facility be granted the flexibility to omit the survey monitoring areas for equipment that is out of service for the week that the survey is being conducted.

Instrument

A portable instrument such as an organic vapor analyzer (OVA) is used to detect acrylonitrile leaks from individual sources. The survey is intended to locate and classify leaks only, and is not intended to be used as a direct measure of mass emission rates from individual sources.

The instrument shall be intrinsically safe for operation in explosive atmospheres as defined by the National Electrical Code by the National Fire Prevention Association or other applicable regulatory code for operation in any explosive atmospheres that may be encountered in its use. The instrument shall, at a minimum, be intrinsically safe for Class 1, Division 1 conditions,

and/or Class 2, Division 1 conditions. The instrument shall not be operated with any safety device, such as an exhaust flame arrestor, removed.

The instrument shall be equipped with an electrically driven pump to ensure that a sample is provided to the detector at a constant flow rate. The nominal sample flow rate, as measured at the sample probe tip, shall be 0.10 to 3.0 l/min (0.004 to 0.1 ft3/min) when the probe is fitted with a glass wool plug or filter that may be used to prevent plugging of the instrument. The scale of the instrument meter shall be readable to ±2.5 percent of the specified leak definition concentration. The instrument shall be equipped with a probe or probe extension for sampling not to exceed 6.4 mm (1/4 in) in outside diameter, with a single end opening for admission of sample.

Calibration

The monitoring instrument is calibrated as follows. Allow an appropriate warm-up period for the instrument. Perform a zero internal calibration of the instrument. Zero gas or air less than 10-ppm acrylonitrile will be used for the zero calibration. Next, the calibration gas is introduced into the instrument sample probe. The calibration gas is a reference compound at a known acrylonitrile concentration approximately equal to the leak definition concentration. The leak definition concentration is the acrylonitrile concentration at the surface of a leak source that indicates that a leak is present. The acrylonitrile leak definition concentration is 10 ppm. A calibration gas with acrylonitrile concentration of approximately the initial screening level of 10-ppm acrylonitrile is used for the calibration. The instrument meter readout is then adjusted to correspond to the calibration gas value. The calibration precision shall be equal to or less than 10 percent of the calibration gas value.

Personnel

The Sterling facility survey is to be conducted by personnel trained and/or experienced in conducting leak detection surveys. The personnel will be familiar with the areas to be surveyed. The personnel will be trained and/or experienced in the operation of the instrument utilized for conducting the survey. The personnel conducting the survey will be responsible for tagging of leaking equipment, documentation, and initiation of repairs of leaking equipment.

General Survey Procedure

A general field leak detection survey will be conducted for the 64 acrylonitrile service areas identified in the Acrylonitrile Leak Detection Survey forms attached. The operator completing the survey will obtain an instrument reading at each of the 64 acrylonitrile-service areas. The instrument readings will be recorded on the survey forms.

Should the instrument detect less than or equal to 10-ppm acrylonitrile, the instrument reading will be noted in the survey forms and the components in that area will be determined to be not leaking. Should the instrument detect greater than 10-ppm acrylonitrile, a detailed survey will be conducted to determine which component(s) in the area are leaking.

The operator will initially conduct a visual survey of the area of concern to detect the leaking component(s). Should the operator not be able to determine visually which component(s) in the area are leaking, then each component in the area will be checked in general accordance with EPA Method 21. The operator will place the probe inlet at the surface of the component interface where leakage could occur. The probe will be moved along the interface periphery while observing the instrument readout. If an increased meter reading is observed, the interface where leakage is indicated will be slowly sampled until the maximum meter reading is obtained. If the maximum observed meter reading is greater than 10-ppm acrylonitrile, then the component is determined to be leaking. The acrylonitrile concentration detected will be recorded on the survey forms.

Components determined to be leaking will be identified with a tag indicating the date of detection, instrument reading, tag identification number, and tester's initials. The tags will be weatherproof and easily visible. The tag identification number, component type, location, and instrument reading will be recorded in the survey forms. A copy of the completed survey form will be sent to the person responsible for repairing the leaking component to initiate the repair. A copy will be maintained in the facility records.

REPAIR PROCEDURES

Should leaking components be detected, repairs will be initiated within five days and completed within fifteen days. Repairs of leaking components will be documented. Should repairs not be initiated in five days or not completed in fifteen days, the delay, reason for delay, and projected repair completion date will be documented. Repaired leaking components will be retested to verify successful completion of the repair. The identification tag will be removed from the component once the successful repair of the leaking component has been completed and documented.

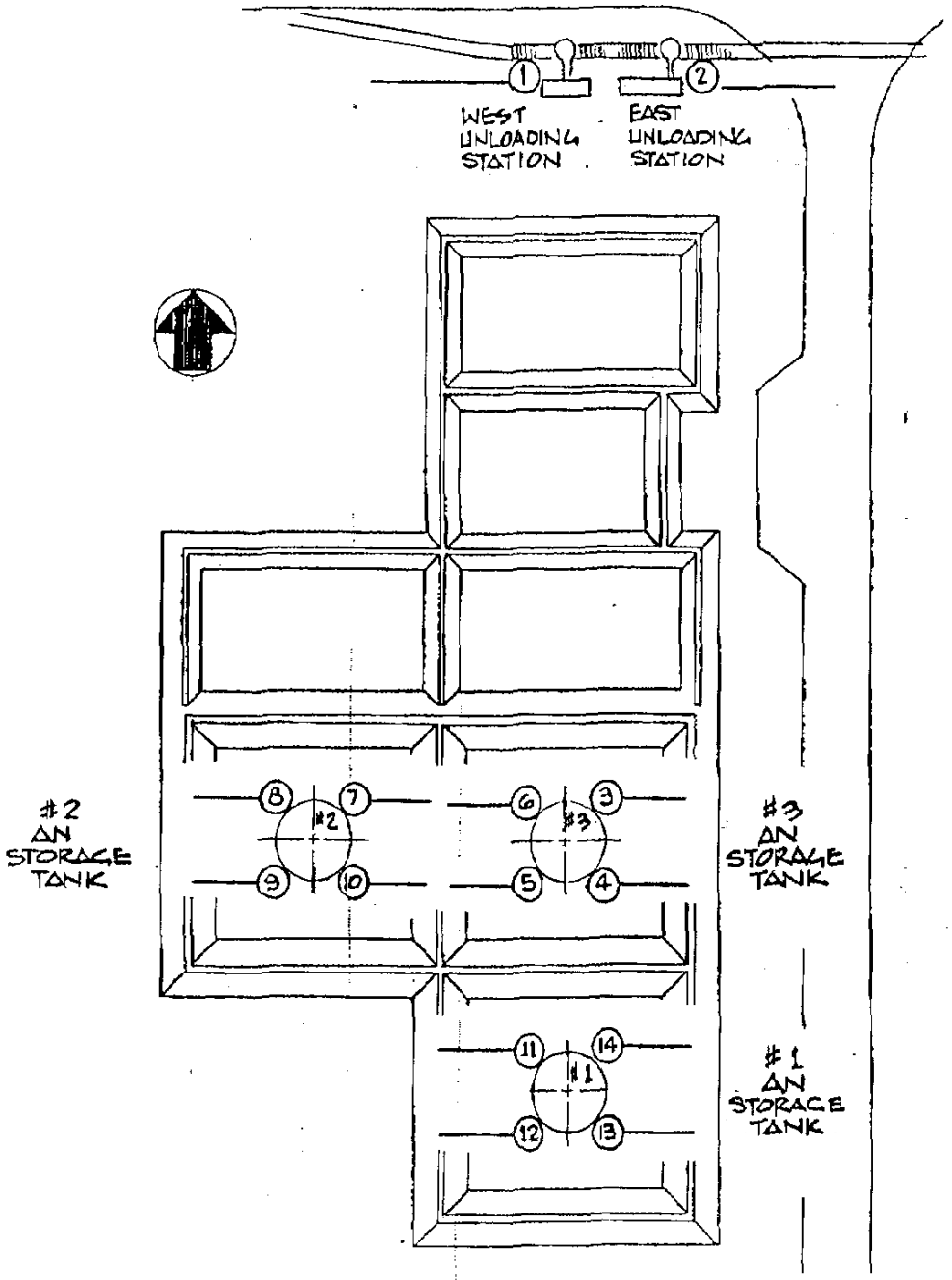
RECORDKEEPING

Copies of each survey and completed log noting leaking components and their repairs will be maintained at the facility. The documented surveys and logs will be retained at the facility a minimum of two years.

ACRYLONITRILE LEAK DETECTION SURVEY AT SANTA ROSA PLANT

DISTRIBUTION:

J. F. Lay
S. G. Mraz



TANK FARM

BULK STORAGE AND TRANSFER AREA

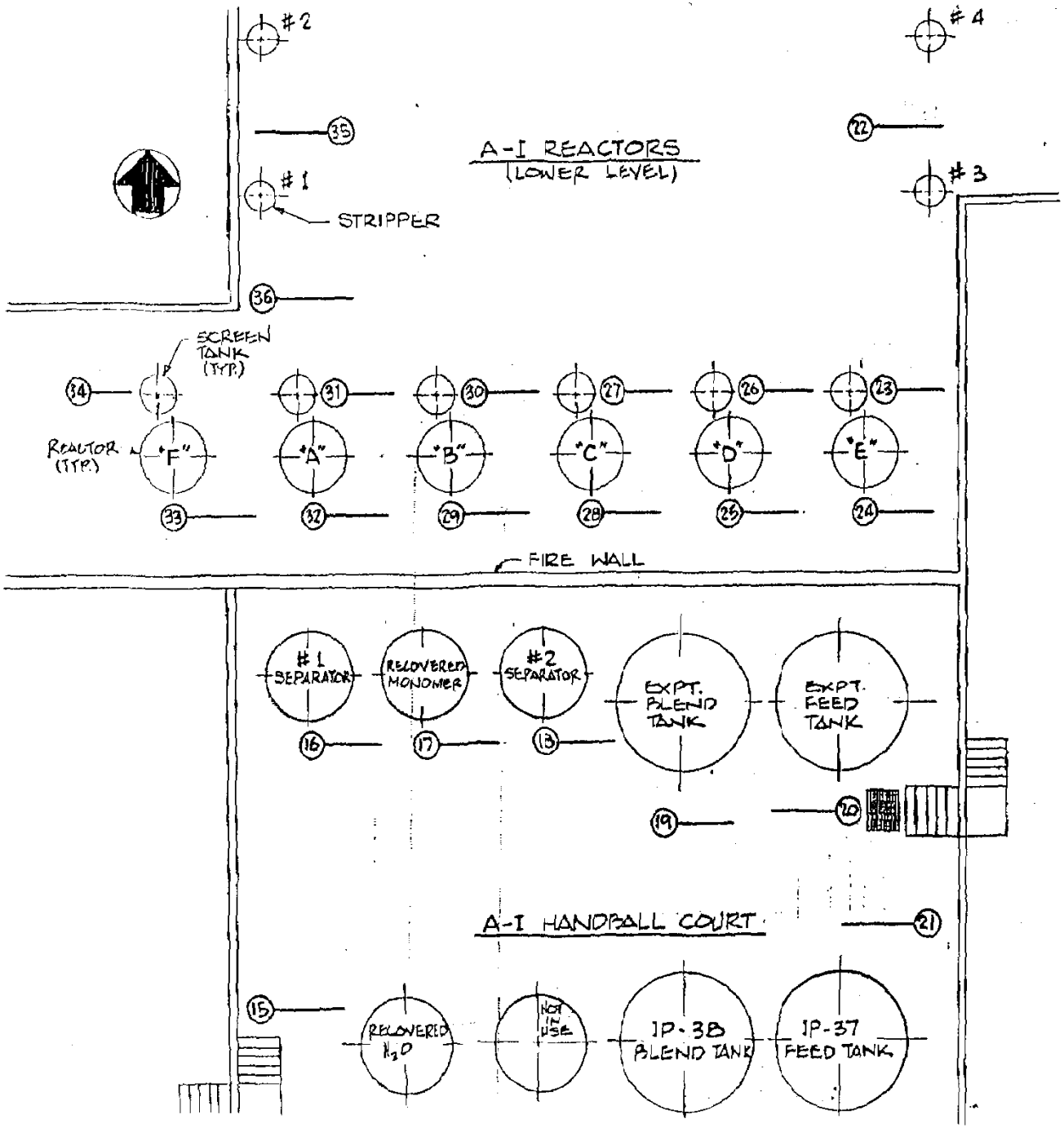
SURVEY SUMMARY (MONTH/DAY/YEAR)

MAXIMUM READING = _____ PPM

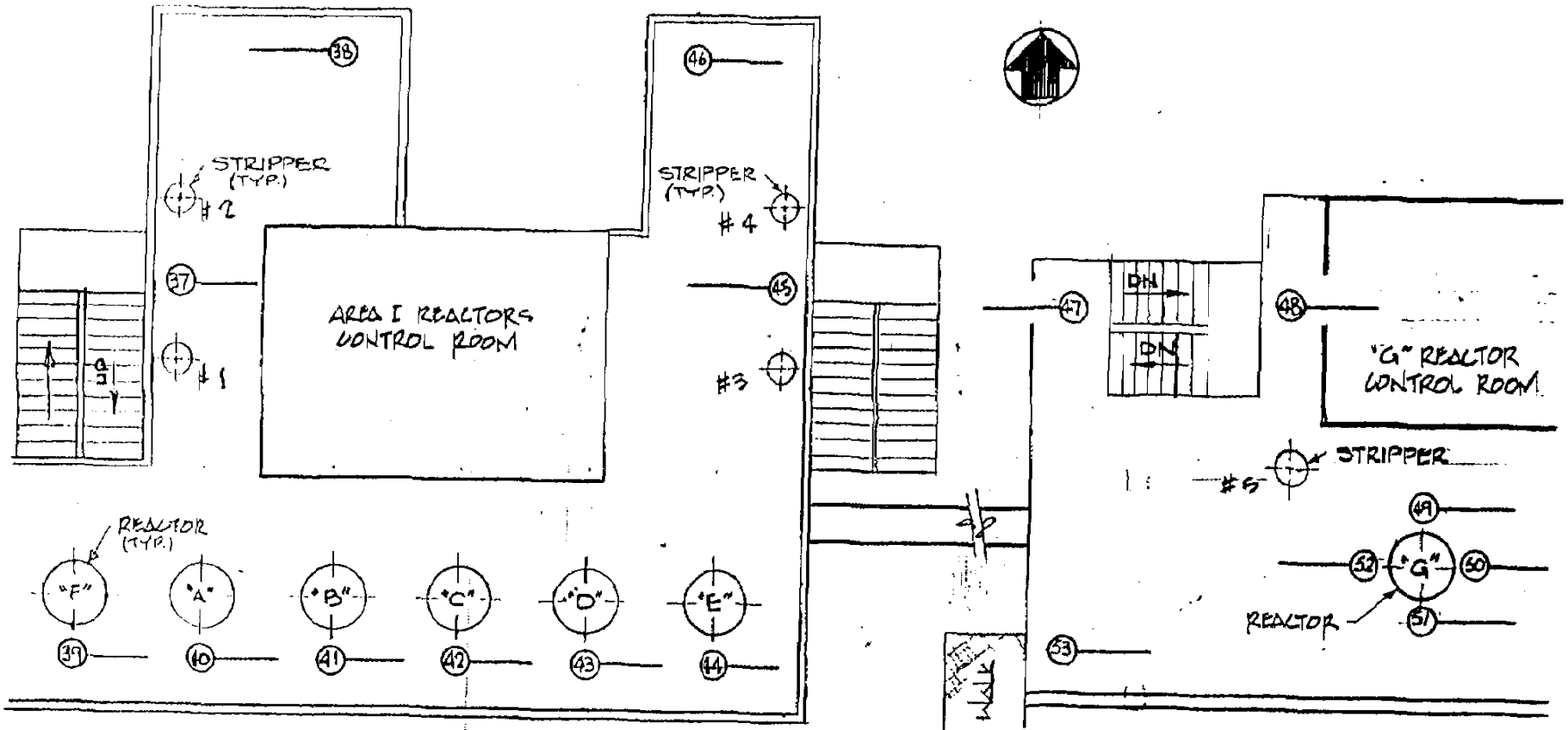
MINIMUM READING = _____ PPM

AVERAGE (n=64) = _____ PPM

NUMBER OF REPAIR TAGS PLACED = _____

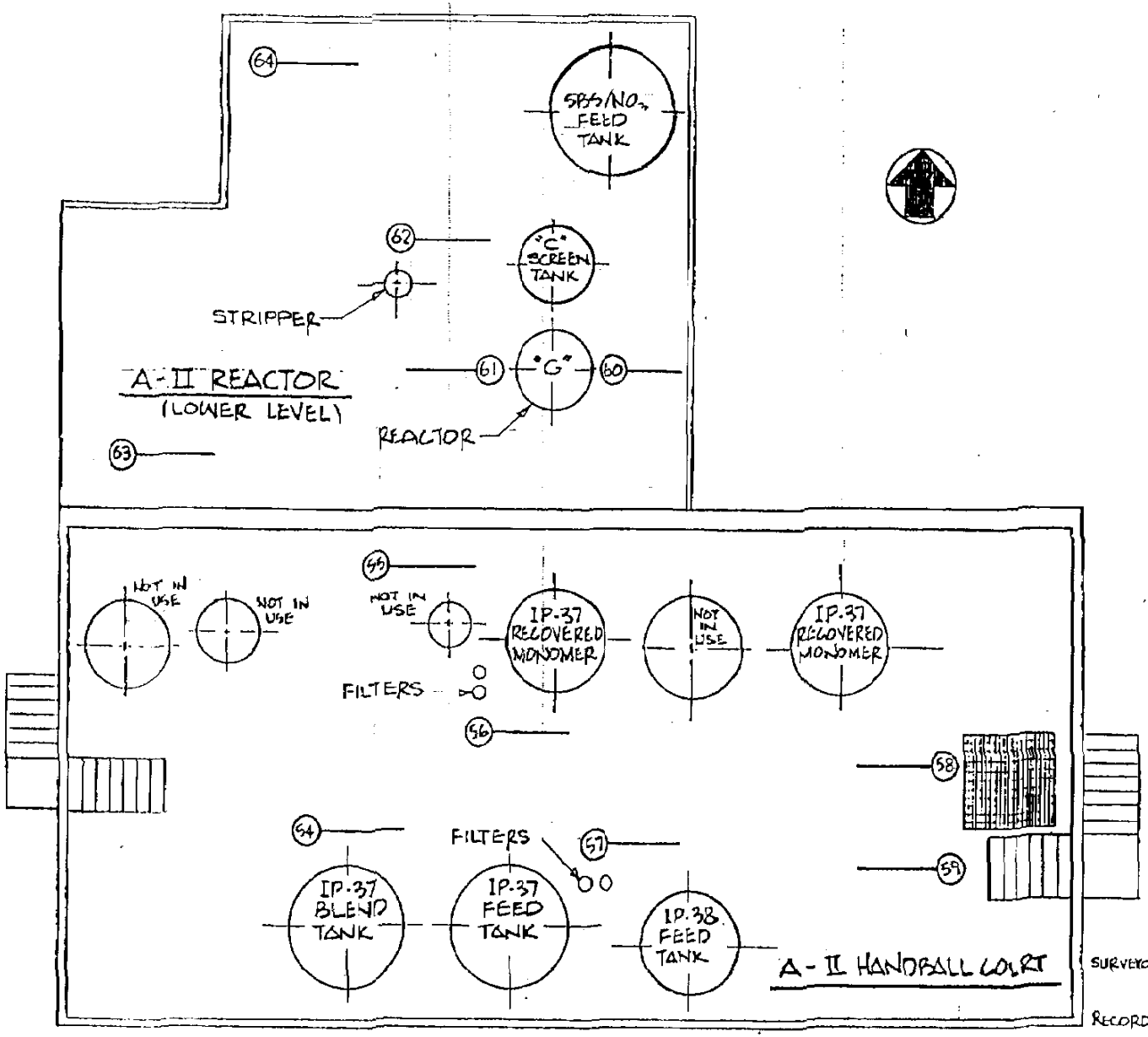

#2
#4
35
22
A-I REACTORS
(LOWER LEVEL)
#1
#3
STRIPPER
36
SCREEN TANK (TYP.)
34
31
30
27
26
23
REACTOR (TYP.)
"F"
"A"
"B"
"C"
"D"
"E"
33
32
29
28
25
24
FIRE WALL
#1 SEPARATOR
RECOVERED MONOMER
#2 SEPARATOR
EXPT. BLEND TANK
EXPT. FEED TANK
16
17
13
19
20
A-I HANDBALL COURT
21
15
RECOVERED H_2O
NOT IN USE
IP-38 BLEND TANK
IP-37 FEED TANK

A-6079



AREA I REACTORS (UPPER LEVEL)

AREA II REACTOR (UPPER LEVEL)



DATE _____

TIME _____

WIND DIR. _____

WIND VEL. _____

TEMP. D.B. _____

TEMP. W.B. _____

BAROMETER _____

HUMIDITY _____

OVA INST. I.D. _____

SURVEYOR ① _____ SIGNATURE _____ TITLE

RECORDER ② _____ SIGNATURE _____ TITLE

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