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area. Post "Contaminated Keep Out" or similar signs at the area boundaries.

(e) The machinery space monitors will make verbal reports to the officer in charge of the space who in turn will relay them to MED and to DCC. The machinery space monitor(s) will not be required to wear protective clothing.

706. Detection Methods

1. Radiological Detection. Monitoring of material and personnel is accomplished by using current NAVSEA allowance radiac instruments in the hands of trained monitoring teams from each repair party.

2. Chemical Detection:

a. Detection by odor. The sense of smell is used. This method is not reliable.

b. Detection by observation. Certain types of chemical warfare agents may be detected by observing symptoms produced in personnel. In some cases the chemical affect will be visible in the form of pools of liquid, droplets, or a vaporous cloud.

c. Detection by use of identification devices. Performed through the use of chemical agent detector kits, liquid visicant detecting paper and crayons. Chemical agent detection devices are restricted to use by trained and qualified personnel.

NOTE: *WHEN A CHEMICAL AGENT IS SUSPECTED TO BE PRESENT, PERSONNEL SHOULD DON PROTECTIVE MASK AND CLOTHING.*

707. Reporting Contamination

1. Contamination reports will be made directly to Damage Control Central over the appropriate JZ circuit. Radiation readings will be reported in Roentgens/Milliroentgens per hour. The time of radiation measurement and the location of the contamination will be included in the report, i.e., "1615 reading 73 R per hour at frame 92 port side main deck". Chemical contamination reports will specify the agent present. The time is not required.

2. Radiological Monitoring (RADMON) Report. Information provided by the DCA to Command Control for use in making the RADMON report shall include time of cessation and dose received.

3. **Material Decontamination.** Decontamination operations shall begin as soon as possible following a CBR attack. Decontamination teams will remain fully clothed at all times. Masks and protective clothing are required only when aerosol creating operations (such as fire hosing, scraping and chipping) are being carried out, and then only if initial deposit intensities exceed 5R/hour. Essential stations should be decontaminated first. The priority is assigned to those areas where the greatest personnel hazards exist. Individual ships shall include in their manual a definite priority for secondary gross decontamination. When possible, the general rule is to decontaminate the ship, working from top to bottom, bow to stern. To limit re-contamination, parties should approach contaminated areas from the windward side.

708. Decontamination Responsibilities

CV/CVN Repair 7 will decontaminate the flight deck and island. Repair 1 will decontaminate the hangar deck.

709. Decontamination Organization

Each repair party shall have decontamination squads organized according to function (i.e., 1-1/2" hose primary gross, or secondary gross decontamination). Squads will normally consist of a squad leader and assistant equipped as necessary for the particular type of decontamination involved. The leader will wear an arm band. Additional men may be detailed from the repair party or from nearby stations if conditions warrant.

710. Decontamination Procedures

1. Complete instructions on Radiological decontamination are detailed in NAVSEA Technical manual, Chapter 070.
2. Complete instructions on BW and CW decontamination are detailed in NAVSEA Technical manual, Chapter 470.
3. The technical community has not developed procedures to decontaminate aircraft at sea on an aircraft carrier. Until standard policies are in place, each ship, in conjunction with the Battle Group Commander and assigned Carrier Airwing Commander, must develop a concept of operations for employment and decontamination and flight crew rotation in a CBR environment.

711. Personnel Decontamination

Personnel decontamination stations are used both for chemical/biological and radiological decontamination and defined in NAVSEA Technical manual Chapter 070.

712. Contamination Control Area/Decontamination Stations

The contamination control/decontamination process area for removing the CBR ensemble should be a space adjacent to and with access from the weather deck or on a weather deck with overhead cover. Either area must also have access to the interior of the ship. Doff rain gear and battle dress (life preservers and mask carrying case) outside of the contaminated area. Gross decontaminate the mask and gloves using the M291 decontamination kit. Immerse boots in a pan of HTH/water. Attendants will cut away the CBR protective clothing. Once the ensemble is removed, the personnel proceed to the decontamination station where the inner garments (fatigues, work clothes, undergarments - except protective mask) are removed. The personnel then shower with soap and water, and are then monitored to ensure that all contamination possible has been removed. Inner garments are placed in bags and monitored. Personnel remain masked until monitoring determines that unmasking may occur. Masks are stored in bags for decontamination and reissue.

713. Nerve Agents

1. Signs and Symptoms. Nerve agent poisoning can be identified from characteristic signs and symptoms. If exposure to vapor has occurred the pupils will be very small, usually pinpoint. If exposure has been percutaneous (through the skin), or by ingestion, the pupils may be normal or only moderately reduced in size or even enlarged. In this event the other symptoms of nerve agent poisoning must be relied on to establish the diagnosis. Only nerve agents produce the characteristic muscular twitching and rapidly developing pin-point pupils, and other nervous system signs. Nerve agents are cumulative poisons and repeated exposures to low concentrations, if not too widely separated, will eventually produce the symptoms.

a. **Mild Poisoning.** Signs and symptoms vary with the route and severity of poisoning. Some agents, such as GA and GB, usually act in forms of vapors, the other VX may act directly as a liquid. Vapors attack principally by the respiratory route, and liquids mainly through the skin. In the case of mild poisoning, signs and symptoms may become noticeable within a few minutes of inhalation of even low concentrations of agent. Symptoms include tightness of the chest, discharge from the nose, salivation, pin-pointing of the pupils with dimming vision and headache. These signs and symptoms are largely due to local absorption of nerve agents and may be

expected to persist for only a few hours, although headache and visual difficulties may last from 24 hours to two weeks.

b. **Moderate Poisoning.** In unprotected personnel, moderate exposure to vapor or aerosol rapidly results in pinpointed pupils with impaired vision, mucous discharge from the nose, tightness in the chest, difficulty in breathing and nausea.

c. **Severe Poisoning.** If the exposure is massive, the local effects will soon be followed by more general symptoms as the compound reaches the circulatory system after being absorbed from the respiratory tract, the skin, and the eyes. Thus, in varying sequences would appear nausea, vomiting, involuntary defecation and urination, mild to severe mental signs, convulsions, paralysis (especially of respiratory muscles), lack of oxygen and mucous discharge in the bronchial tubes. Death may occur within minutes. Should the exposure be through the skin (percutaneous), the sequence of signs and symptoms will be different, usually beginning with muscle jerking and twitching. Because of slow passage of the agent through the skin, death may not occur for one or more hours following such exposures, except when the dose is massive. Absorption through the mouth produces initial symptoms similar to those seen after percutaneous exposure, except that local effects are absent. Nausea, vomiting and diarrhea are followed by fatigue, weakness, perhaps mental signs, convulsions and paralysis leading to death. The time may be minutes to hours depending on the dose.

2. Self/First Aid: The four principles of therapy for nerve agent poisoning are:

- a. Atropine injections (3 each).
- b. Enzyme reactivation ((2-PAM) Cl (oxime)).
- c. Decontamination.
- d. Assisted ventilation (CPR or respirator).

Exposure to a nerve agent, because of its rapid action, produces effects which require immediate self treatment. The onset of an unexplained nasal secretion, tightness or constriction of the chest, shortness of breath, constriction of the pupils, muscular twitching or nausea and abdominal cramps call for immediate intramuscular injection of atropine. From 1 to 3 automatic injection devices, each containing 2 mg of atropine are carried by each person. These should be administered as self-aid at 10 - 15 minutes intervals to control symptoms. Further treatment is required and provided by medical personnel.

714. Blister Agents (Vesicants), Mustard (HD) and Nitrogen Mustards (HN-1, HN2, HN-3)

1. Signs and Symptoms:

a. Skin. The skin symptoms can be divided into four phases:

(1) Inactive Period

(2) Redness of the Skin.

(3) Blistering.

(4) Decay of Tissue.

It should be noted that HN-3, owing to its low volatility, does not constitute a grave VAPOR danger to the skin in free air. The penetration is not noticed, because it is painless. The inactive period is decreased as the dose of the toxic agent, the temperature and the humidity of the air are increased. For mustard, this phase usually lasts 4 - 8 hours, but the duration may vary between one hour and several days. Redness is accompanied by intensive itching. The sensitivity of the top layers of the skin is not the same everywhere; it depends on the thickness of the skin and on the density of the sweat glands. Apart from mucous membranes, the most sensitive areas are the face, the arm pits, the genitals, the neck, the skin between the fingers and the nailbeds.

b. Eyes. In the eye, mustard penetrates without causing pain. Only after several hours do tearing and inflammatory reactions appear. There is intense pain, intolerance of light, and inflammation of the eye lids.

c. Respiratory Tract. Mustard attacks all the mucous membranes of the respiratory tract. After a latent period of 4 - 6 hours it irritates and congests the mucous membranes of the nasal cavity and the throat as well as the lining of the trachea and the bronchi. Symptoms start with nasal secretion, burning pain in the throat, and the voice becomes hoarse. Often the vocal cords become paralysed, causing loss of voice. There is a pronounced difficulty in breathing. Consequently, the lower airways become easily infected, causing pneumonia. If inhaled dose is sufficiently high, death occurs within a few days.

d. Gastro-intestinal Tract. Here mustards also cause destruction of the mucous membranes. Symptoms are nausea, vomiting, pain, bloody diarrhea and exhaustion. Shock may also occur.

e. Systemic Action. The symptoms, described thus far, are due to a direct local action of the mustards. However, these agents can also cause problems in distant tissues. Mustards are absorbed from the oral and respiratory routes and even through the skin. The general signs and symptoms are the same as those caused by nuclear radiation: headache, nausea, vomiting, anorexia, stomach pain, anemia, etc..

2. Self/First Aid:

a. Skin:

(1) Erythema. The skin turns red and itches intensely. This itching can be diminished by local application of cooling preparations i.e. calamine lotion or creams containing a local anesthetic or amylsalicylate.

(2) Blisters. Large blisters should be covered with sterile vasoline gauze. Typical antibiotics (bacitracin, etc.) May be applied. Do not change the dressing too often and do not apply strong antiseptics. Draining of the blisters is to be done by trained medical personnel.

(3) Eyes. When the lesion is not very serious, to control pain apply an analgesic solution. To prevent infection treat with appropriate anti-bacterial preparations. When the lesion proves more serious (blistering of the eyelids) continue application of the anti-bacterial preparation at more frequent intervals.

b. Respiratory Tract. Mild injury with hoarseness and sore throat only, usually requires no treatment. If necessary, relieve the irritation of the throat by a gargle and depress the cough with codeine.

c. Gastro-intestinal Tract. In case of nausea, vomiting and diarrhea, give 0.5 mg atropine sulfate and sedatives. Every effort should be made to eat properly and replace the fluid.

715. **Lewisite (L)**

1. Signs and Symptoms:

a. Skin. The vesicant properties of Lewisite are the same as those of HD, although quicker. Irritation is noted very shortly after contact with the toxic agent and redness of the skin is usually evident within 30 minutes. Blisters appear on the first or second day and the tissue destruction is deeper and pain more intense than with mustard.

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b. **Eyes.** Lewisite causes an immediate burning sensation in the eye. The symptoms are the same as for mustard but appear more rapidly. Inflammation of the mucous membranes occurs within an hour following contact. Moreover, the risk of permanent blindness or permanent lesion of the cornea is higher than for mustard.

c. **Respiratory Tract.** Here also, the symptoms are the same as for mustard but develop more rapidly. Lewisite immediately acts on the mucous membranes and, initially, as an incapacitant by severely irritating the respiratory passages.

d. **Systemic Action.** Lewisite can provoke gastro-intestinal disorders with bloody diarrhea, liver and kidney disorders, and the general weakness characterized by low blood pressure and subnormal body temperature.

2. Self/First Aid:

a. **Skin.** Blisters from Lewisite are treated in the same way as those from mustard. Calimine lotion may be applied to reduce itching and produce a soothing effect.

b. **Eyes.** If performed within 2 minutes the application of an ointment may diminish the effects of Lewisite. (This is of questionable value if performed later). The safest treatment, if the eyes are contaminated, is to flush them immediately with water. Lesions due to Lewisite are treated in the same way as those caused by mustard.

c. **Other Effects.** The effects of Lewisite on the respiratory and intestinal tracts are treated in the same way as described for mustard. Use BAL in oil for heavy metal poisoning.

716. Halogenated Oximes

1. **Signs and Symptoms.** The action on the skin is immediate. Phosgene oxime initially provokes an irritation resembling that following contact with a stinging nettle. In higher doses, the intensity of the pain increases rapidly and radiates from the area of direct contact. Within a minute this area turns white while being surrounded by a reddening of the skin. In an hour this whole area is swollen. The next day the skin is brown and blisters appear. After some days, scaling and deadening of the skin is observed, followed by crust formation and pus discharge. Recovery takes 1 - 3 months. Phosgene oxime also irritates and swells the eyes and the respiratory tract, possibly leading to permanent lesions of the cornea resulting in blindness, and to accumulation of fluid causing pneumonia.

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2. Self/First Aid. Immediately following decontamination apply dressings soaked in sodium bicarbonate solution. From this point on treat the effects as burns.

717. Choking Agents (CG, DP)

1. Signs and Symptoms. The symptoms occurring during and immediately after the exposure are: tearing, sore throat, coughing, tightness of the chest, nausea, vomiting, and headache. They are caused by the irritating action of phosgene in the air. In dry and warm weather the irritating action is very mild. Irritation quickly disappears after termination of the exposure and is followed by a symptomless period of 2 - 6 hours after which the first symptoms occur. The patient shows signs of uneasiness and fear. He is seized with serious attacks of coughing producing large quantities of white or yellow - sometimes bloody-frothy fluid. Nausea, vomiting and gastric pain caused by phosgene-containing saliva may occur. Breathing is quick, shallow and painful. The pulse is fast and faint. The patient ultimately goes into shock, followed by death through cardiac arrest or asphyxia.

2. Self/First Aid. After inhalation of a high dose of phosgene the lungs fill with fluid. The casualty will need rest and warmth. Further treatment, such as sedation and oxygen, are to be administered by medical personnel. As long as no symptoms occur, combat tasks are continued. In case of tightness of the chest and coughing however, the patient must immediately take complete rest. He must be evacuated in a semi-seated position and must be kept warm.

718. Blood agents (AC, CK, SA)

1. Signs and Symptoms. The odor of blood agents can be detected in low concentrations. However, in high concentration the ability to detect the odor is lost due to paralysis of the nerves in the nose. They act very quickly when concentrations are high (10,000 mg/m) and death may result in 15 seconds. At lower concentrations, poisoning has two phases, an active phase and a passive phase. The active phase is characterized by convulsions and heavy labored breathing. The passive phase is characterized by a drop in blood pressure, due to lack of oxygen, and painful breathing, followed by death. Autopsies reveal a bright red color of the blood and the muscles.

2. Self/First Aid. High concentrations of blood agents activate very rapidly and leave very little time for therapy. However, if the patient is still alive after the cloud has passed, he probably will recover spontaneously. Further treatment will be administered by medical personnel.

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719. Nuclear Weapons Burst Information

1. Personnel Countermeasures Against Nuclear Weapons Burst
 - a. Symptoms of Radiation Sickness

TIME AFTER EXPOSURE	500-600 ROENTGENS	300-500 ROENTGENS	100-300 ROENTGENS
FIRST DAY	NAUSEA AND VOMITING	NAUSEA AND VOMITING	NAUSEA AND VOMITING
FIRST WEEK	NO DEFINITE SYMPTOMS DIARRHEA, VOMITING INFLAMMATION OF MOUTH AND THROAT	NO DEFINITE SYMPTOMS	NO DEFINITE SYMPTOMS
SECOND WEEK	FEVER, RAPID LOSS OF WEIGHT, DEATH (MORTALITY ABOUT 95%)	BEGINNING HAIR LOSS, LOSS OF APPETITE AND GENERAL SICK FEELING	
THIRD WEEK		FEVER, SEVERE INFLAMMATION OF MOUTH AND THROAT PALLOR, SKIN HEMORRHAGES, DIARRHEA AND NOSE BLEEDS, RAPID LOSS OF WEIGHT, DEATH (MORTALITY ABOUT 50% AT 450 ROENTGENS)	HAIR LOSS, LOSS OF APPETITE GENERAL SICK FEELING, SORE THROAT, PALLOR, SKIN HEMORRHAGES, DIARRHEA, MODERATE LOSS OF WEIGHT (RECOVERY LIKELY UNLESS COMPLICATED BY POOR PREVIOUS HEALTH OR SUPER-IMPOSED INJURIES OR INFECTION)

b. Casualty Estimates. The following table may be of value to the Commanding Officer in making his decision as to personnel exposure. The effects tabulated are for periods of time over which total dose is received. The best percentage figures are based on the best current available evidence. They will probably be lower when personnel receive adequate medical treatment.

	1 DAY		3 DAYS		1 WEEK		1 MONTH		3 MONTHS	
0-75R	0	0	0	0	0	0	0	0	0	0
100R	2	0	0	0	0	0	0	0	0	0
125R	15	0	2	0	0	0	0	0	0	0
150R	25	0	10	0	2	0	0	0	0	0
200R	50	0	25	0	15	0	2	0	0	0

300R	100	20	60	0	40	0	15	0	0	0
450R	100	50	100	25	90	15	50	0	0-5	0
650R	100	+95	+100	90	100	40	80	10	5-0	0
	SICK	DIE								

If the recurring dose rate is not too high, partial recovery can begin even while the body is exposed to nuclear radiation. A delay of about 12 hours should be granted. This is the apparent time required for appreciable recovery while irradiation proceeds. For exposures of less than 12 hours, the total dosage received - and not the dose rate - determines the seriousness of the injury. For longer exposure times, there is a certain degree of recovery during the period of exposure and a larger total dose is necessary to produce a given effect. A dose of 200 roentgens in a short time will result in vomiting and nausea in about 50 percent of the exposed personnel, and these individuals would become combat casualties. On the other hand, a series of eight exposures of 25 roentgens each at weekly or longer intervals, would be expected to have little effect on combat ability. A total of 480 roentgens over 32 days is expected to have roughly the same effect as 360 roentgens over 6 days or an acute dose of less than 200 roentgens.

c. Probable Effect of Chronic Whole Body Gamma Radiation Doses

DAILY CHRONIC DOSE	DAYS EXPOSURE	ACTUAL TOTAL DOSE	ACUTE DOSE EQUIVALENT (LESS THAN)
60R	6	360R	200R
30R	5	150R	100R
30R	14	420R	200R
15R	12	180R	100R
15R	32	480R	200R

d. Thumb Rules for Estimating Radiological Intensity or Dosage

(1) Rule No. 1 - Decay Rate Rule. If you double the time since detonation you reduce the intensity to one-half its present value.

Example: Intensity at one hour after detonation is 240 R/hr. Find the intensity at H+2, +4 and +8 hours.

$$\begin{aligned} H+1 &= 240 \text{ R/hr} \\ H+2 &= 120 \text{ R/hr} \\ H+4 &= 60 \text{ R/hr} \\ H+8 &= 30 \text{ R/hr} \end{aligned}$$

(2) Rule No. 2 - Dose for Short Period of Time (Up to One Hour). For short periods of time (up to one hour), the intensity in any area may be assumed to remain constant. The dose received during a short period of time is equal to the product of time-of-stay in hours, times the intensity at the time of entry.

Example: The intensity in an area is 100 R/hr and a person remains in the area for 30 minutes. What dose would he receive?

FORMULA: $D = \text{Time of Stay (T.S.)} \times \text{Intensity}$

Limitation: The formula is valid for the first half of the half-life period. If exposure time is greater than one half of a half-life, but less than a whole half-life, the dose for the entire apparent half-life will be used.

$$\begin{aligned} D &= \text{T.S.} \times I \\ D &= .5 \times 100 \text{ R/hr} \\ D &= 50 \text{ R} \end{aligned}$$

(3) Rule No. 3 - Dose to Infinity Rule. The maximum dose that can be received in an area is equal to five times the intensity times the number of hours after detonation that the intensity was taken.

Example: A person enters a contaminated area at H+8 hours and the intensity at this time is 4 R/hr. What dose would be received if he stayed about three years?

$$\begin{aligned} \text{FORMULA: } D &= 5 \times I \times T \\ D &= 5 \times 4 \text{ R/hr} \times \text{H+8 hours} \\ D &= 160 \text{ R} \end{aligned}$$

(4) Rule No. 4 - Dose per Half-Life Period. The dose received during a half-life period is equal to one-half the product of the INTENSITY and TIME when the intensity was taken, i.e., $D \frac{1}{2} \text{ Life} = \frac{1}{2} I \times T$. The dose received during one half-life period will be approximately equal to 1/10 the total to infinity.

Example: At H+4 hours a monitor sends in an intensity reading of 50 R/hr. What dose will he receive during the next half-life period?

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$$\begin{aligned} H+8 &= \frac{1}{2} I \times T \\ D &= \frac{1}{2} \times 50 \times 4 \\ H+4 &= 100 R \end{aligned}$$

720. CBR-Bill Information / Considerations

1. **CBR Defense Bill.** The detailed plan for phased implementation of CBR countermeasures is contained in the CBR bill. This bill should be a ship specific application of doctrinal concepts and technical procedures. The rapid technical changes in CBR countermeasures mandates that all departments maintain an ongoing review and revision of the CBR-D bill. It is highly recommended that the first step is to review the DCA's library of available doctrine to ensure its completeness, that publications are of latest revision, that related message traffic and other information is considered, and that the person(s) implementing the bill are well oriented in CBR defense countermeasures and procedures.
2. **Recommended Enclosures to the CBR Bill.** The DCA may also add additional enclosures to the bill to ease operation in a CBR environment, such as CBR survey sheets, dose rate charts (nuclear), log-log graphs, information on CBR detection, information on CBR equipment operation, information on CBR self and first aid, and information on the set up and operation of the CCA/decon station.

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CBR-D ON-STATION SURVEY RECORDING SHEET (NUCLEAR)

TIME	TOPSIDE		BRIDGE		REPAIR 2		REPAIR 3		DC CENTRAL		DEEP SHELTER	
	INT	DOSE	INT	DOSE	INT	DOSE	INT	DOSE	INT	DOSE	INT	DOSE
H+1												
H+2												
H+4												
H+6												
H+8												
H+10												
H+12												
H+14												
H+16												
H+18												
H+20												
H+22												
H+24												
H+26												
H+28												
H+30												
H+32												
H+34												
H+36												
H+												
H+												
H+												
H+												
H+												

NOTE: TAILOR TO SHIP. INCLUDE STATION RESIDUAL NUMBERS. RECOMMENDED LAMINATION COPY FOR: L/L, PLOTTER, RECORDER, PHONES.

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RADIOLOGICAL SURVEY FORMS

SHIP: _____
 TYPE SURVEY: _____
 ROUTE NUMBER: _____
 SHEET NUMBER: _____ OF _____
 EXIT: _____

DATE: _____
 MONITOR: _____
 INSTRUMENT TYPE: _____
 INSTRUMENT SERIAL: _____
 REENTRY: _____

RADIOLOGICAL SURVEY FORM

NUMBER	AREA/OBJECT	TIME	METER READING / INDICATION		
			POSITION	SHIELD OPEN	SHIELD CLOSED

INSTRUCTIONS:

1. Routes to be established in advance.
2. Do not record radiac measurements in SHIELD OPEN column. Note either BETA or NO BETA.
3. Time of wipe test is the time measurements are made, not time sample was taken.
4. Do not record RADIAC measurement on uncontrolled wipe test. Note RC for removable contamination NO RC if there is none. Enter NO RC in SHIELD OPEN column if the RADIAC reading does not change from the SHIELD OPEN measurement.
5. POSITION column notations indicate location at which measurement is taken: 3' ABOVE DECK to indicate waist height area monitoring; OPERATOR to indicate normal watchstander position at waist height; CONTROLLED WIPE TEST and UNCONTROLLED WIPE TEST to indicate wipe sample.
6. Readings may fluctuate as RADIAC instrument is rotated through various orientations at the same position. Always record highest measurement obtained.

COMNAVAIRPAC/
COMNAVAIRLANTINST 5400.27C

SHIP: _____
 TYPE SURVEY: Rapid Internal Survey
 ROUTE NUMBER: 2
 SHEET NUMBER: 1 OF 1
 EXIT: N/A

DATE: _____
 MONITOR: _____
 INSTRUMENT TYPE: _____
 INSTRUMENT SERIAL: _____
 REENTRY: N/A

RADIOLOGICAL SURVEY FORM

NUMBER	AREA/OBJECT	TIME	METER READING / INDICATION		
			POSITION	SHIELD OPEN	SHIELD CLOSED
1	CCA #1		3' ABOVE DECK 3' INBOARD OF ENTRANCE		
2	DECON STATION #1		3' ABOVE DECK 3' AFT OF ENTRANCE		
3	CIC		3' BELOW RED CIRCLE ON OVERHEAD		
4	CIC TRACK SUPERVISOR CONSOLE		OPERATOR		
5	BRIDGE RADAR REPEATER		OPERATOR		
6	CAPTAIN'S CHAIR		OPERATOR		
7	HELM		OPERATOR		

INSTRUCTIONS:

1. Routes to be established in advance.
2. Do not record radiac measurements in SHIELD OPEN column. Note either BETA or NO BETA.
3. Time of wipe test is the time measurement is made, not time sample was taken.
4. Do not record RADIAC measurement on uncontrolled wipe test. Note RC for removable contamination NO RC if there is none. Enter NO RC in SHIELD OPEN column if the RADIAC reading does not change from the SHIELD OPEN measurement.
5. POSITION column notations indicate location at which measurement is taken: 3' ABOVE DECK to indicate waist height area monitoring; OPERATOR to indicate normal watchstander position at waist height; CONTROLLED WIPE TEST and UNCONTROLLED WIPE TEST to indicate wipe sample.
6. Readings may fluctuate as RADIAC instrument is rotated through various orientations at the same position. Always record highest measurement obtained.

SHIP: _____
 TYPE SURVEY: Rapid External Survey
 ROUTE NUMBER: 3
 SHEET NUMBER: 1 OF 1
 EXIT: Door 02-60-4, Port Side 02 level aft of Bridge
stbd

DATE: _____
 MONITOR: _____
 INSTRUMENT TYPE: _____
 INSTRUMENT SERIAL: _____
 RE-ENTRY: Door 1-110-5 Main Deck
entrance to Decon #2

RADIOLOGICAL SURVEY FORM

NUMBER	AREA/OBJECT	TIME	METER READING / INDICATION		
			POSITION	SHIELD OPEN	SHIELD CLOSED
1	PORT BRIDGE WING		3' ABOVE DECK 3' OUTBOARD OF DOOR		
2	PORT GYRO REPEATER		UNCONTROLLED WIPE TEST		
3	FLYING BRIDGE		3' ABOVE DECK CENTERLINE		
4	GYRO REPEATER ON FLYING BRIDGE		UNCONTROLLED WIPE TEST		
5	MACHINE GUN		OPERATOR UNCONTROLLED WIPE TEST		
6	STBD BRIDGE WING		3' ABOVE DECK 3' OUTBOARD OF DOOR		
7	PORT BRIDGE WING		UNCONTROLLED WIPE TEST		

INSTRUCTIONS:

- Routes to be established in advance.
- Do not record radiac measurements in SHIELD OPEN column. Note either BETA or NO BETA.
- Time of wipe test is the time measurement is made, not time sample was taken.
- Do not record RADIAC measurement on uncontrolled wipe test. Note RC for removable contamination NO RC if there is none. Enter NO RC in SHIELD OPEN column if the RADIAC reading does not change from the SHIELD OPEN measurement.
- POSITION column notations indicate location at which measurement is taken: 3' ABOVE DECK to indicate waist height area monitoring; OPERATOR to indicate normal watchstander position at waist height; CONTROLLED WIPE TEST and UNCONTROLLED WIPE TEST to indicate wipe sample.
- Readings may fluctuate as RADIAC instrument is rotated through various orientations at the same position. Always record highest measurement obtained.

COMNAVIAIRPAC/
COMNAVIAIRLANTINST 5400.27C

SHIP: _____
 TYPE SURVEY: Supplementary Survey
 ROUTE NUMBER: 1
 SHEET NUMBER: 1 OF 2
 EXIT: _____

DATE: _____
 MONITOR: _____
 INSTRUMENT TYPE: _____
 INSTRUMENT SERIAL: _____
 RE-ENTRY: _____

RADIOLOGICAL SURVEY FORM

NUMBER	AREA/OBJECT	TIME	METER READING / INDICATION		
			POSITION	SHIELD OPEN	SHIELD CLOSED
1	CREW'S MESS GALLEY 2-90-2		3' ABOVE DECK HIGHEST MEASUREMENT IN COMPT.		
2	CREW'S MESS SCULLERY 2-90-2		3' ABOVE DECK HIGHEST MEASUREMENT IN COMPT.		
3.	CREW'S MESS DINING AREA 2-70-2		3' ABOVE DECK HIGHEST MEASUREMENT IN COMPT.		
4	CREW'S BERTHING 3-110-0		3' ABOVE DECK HIGHEST MEASUREMENT IN COMPT.		
5	CREW'S HEAD 3-110-1		3' ABOVE DECK HIGHEST MEASUREMENT IN COMPT.		
6	CREW'S HEAD DECON #2 1-120-2		3' ABOVE DECK HIGHEST MEASUREMENT IN COMPT.		
7	CREW'S HEAD DECON #2 1-120-2		CONTROLLED WIPE TEST SHOWER CONTROLS		

INSTRUCTIONS:

1. Routes to be established in advance.
2. Do not record radiac measurements in SHIELD OPEN column. Note either BETA or NO BETA.
3. Time of wipe test is the time measurement is made, not time sample was taken.
4. Do not record RADIAC measurement on uncontrolled wipe test. Note RC for removable contamination NO RC if there is none. Enter NO RC in SHIELD OPEN column if the RADIAC reading does not change from the SHIELD OPEN measurement.
5. POSITION column notations indicate location at which measurement is taken: 3' ABOVE DECK to indicate waist height area monitoring; OPERATOR to indicate normal watchstander position at waist height; CONTROLLED WIPE TEST and UNCONTROLLED WIPE TEST to indicate wipe sample.
6. Readings may fluctuate as RADIAC instrument is rotated through various orientations at the same position. Always record highest measurement obtained.

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SHIP: _____
 TYPE SURVEY: Detailed Survey
 ROUTE NUMBER: 1
 SHEET NUMBER: 1 OF 10
 EXIT: Entrance to Decon #1 Door 1-40-4
1-40-4

DATE: _____
 MONITOR: _____
 INSTRUMENT TYPE: _____
 INSTRUMENT SERIAL: _____
 RE-ENTRY: Entrance to Decon #1 door

RADIOLOGICAL SURVEY FORM

NUMBER	AREA/OBJECT	TIME	METER READING / INDICATION		
			POSITION	SHIELD OPEN	SHIELD CLOSED
1	FO'C'SLE		FRAME 1 CENTERLINE		
2	FO'C'SLE		FRAME 2 PORT SIDE		
3	FO'C'SLE		FRAME 2 STBD SIDE		
4	FO'C'SLE		FRAME 3 PORT SIDE		
5	FO'C'SLE		FRAME 3 CENTERLINE		
6	FO'C'SLE		FRAME 3 STBD SIDE		
7	FO'C'SLE		CONTROLLED WIPE TEST		

INSTRUCTIONS:

1. Routes to be established in advance.
2. Do not record radiac measurements in SHIELD OPEN column. Note either BETA or NO BETA.
3. Time of wipe test is the time measurement is made, not time sample was taken.
4. Do not record RADIAC measurement on uncontrolled wipe test. Note RC for removable contamination NO RC if there is none. Enter NO RC in SHIELD OPEN column if the RADIAC reading does not change from the SHIELD OPEN measurement.
5. POSITION column notations indicate location at which measurement is taken: 3' ABOVE DECK to indicate waist height area monitoring; OPERATOR to indicate normal watchstander position at waist height; CONTROLLED WIPE TEST and UNCONTROLLED WIPE TEST to indicate wipe sample.
6. Readings may fluctuate as RADIAC instrument is rotated through various orientations at the same position. Always record highest measurement obtained.

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DAMAGE CONTROL REPAIR STATIONS (DCRS) CBR ASSIGNMENTS

NUCLEAR DEFENSE

<u>Number required</u>	<u>Assignment</u>	<u>Dress out</u>
1	Locker leader	(Full battle dress with anti-flash gear & mask)
1	Scene leader	
1	Internal Monitor (AN/PDR-43)	
1	External Monitor (AN/PDR-43)	
1	Relief Monitor	
1	Internal Recorder	
1	External Recorder	
4-6 personnel	Material Decontamination Team	
2	Decon Station Activation	
1	Exit Monitor (AN/PDR-27)	
2	Internal Monitor (CP-95)	
1	Internal Traffic Controller	
1	External Traffic Controller	

CHEMICAL DEFENSE

1	Locker leader	Yes
1	Scene leader	Yes
1	Internal Sampler (M-256 Kit)	Yes
1	External Sampler (M-256 Kit)	Yes
4-6 personnel	Material Decontamination Team	Yes
1	Decon Station Activation	Yes
1	Internal Recorder	Yes
1	External Recorder	Yes
1	Internal Traffic Controller	Yes
1	External Traffic Controller	Yes
2	Stretcher Bearers	Yes

BIOLOGICAL DEFENSE

1	Locker Leader	Yes
1	Scene Leader	Yes
1	Internal Recorder	Yes
1	External Recorder	Yes
1	Internal Sampler	Yes
1	External Sampler	Yes
1	Decon Station Activation	Yes
1	Internal Traffic Controller	Yes
1	External Traffic Controller	Yes
2	Stretcher Bearers	Yes
4-6 personnel	Material Decontamination Team	Yes

NOTES:

1. All assignments must be reflected on the DCRS organization chart.
2. For all situations; CMWD, Circle WILLIAM, and ZEBRA assigned by name and fitting number.
3. Ensure personnel assigned for purge ship, and striking below topside non-essential porous/absorbent materials as per CBR bill.

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CHAPTER 8

CV/CVN FLIGHT DECK/HANGAR BAY FIRE DOCTRINE

801. References

- (a) NSTM Chapter 555, Shipboard Fire Fighting
- (b) NAVAIR 00-80R-14, NATOPS U.S. Navy Aircraft Firefighting and Rescue Manual

802. Purpose

The purpose of this section is to outline responsibilities, cooperation and support of the DCA and Air Officer for guidelines on the coordination of firefighting efforts for Flight Deck and Hangar Bay casualties.

803. Procedures

In the event of a fire on the flight/hangar deck:

- 1. The Air Officer has overall responsibility for aircraft firefighting, salvage, jettison, personnel rescue and aviation fuels repair in accordance with NAVAIR 00-80R-14.
- 2. The Damage Control Assistant shall:
 - ___ Man Damage Control Central.
 - ___ Order effected AFFF and Transfer Stations manned.
 - ___ Ensure Electrical/Mechanical isolation of area is complete and status passed to On-Scene Leader.
 - ___ Establish communications with Air Officer/Hangar Deck Officer.
CKT:
 - ___ Establish communications with appropriate AFFF Stations on X50J circuit.
 - ___ Establish communications with the appropriate repair locker and muster the At Sea Fire Party or IET.

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___ Set fire boundaries:

Top: _____

Aft: _____ Forward: _____

Bottom: _____

3. The On-Scene Leader shall:

___ Report Flying Squad manned and ready.

___ Provide fire fighting personnel to flight deck as requested by the Air Officer

___ Provide fire fighting personnel to hangar bay OSL as available.

___ Establish communications with Flying Squad at the Scene.
CKT:

4. In the event the fire in the Hangar Bay/Flight Deck is out of control, the DCA or Air Officer will request the ship go to General Quarters.

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MASTER BIBLIOGRAPHY

1. **OPNAVINST 3120.32 (Series), Standard Organization and Regulations of the U.S. Navy (SORM)**
2. **NWP 3-20.31, Surface Ship Survivability**
3. **NSTM Chapter 555, Shipboard Firefighting**
4. **NATOPS 00-80R-14, U.S. Navy Aircraft Firefighting and Rescue Manual**
5. **COMNAVAIRPAC/COMNAVAIRLANT 3500.20 (Series)**
6. **NSTM Chapter 079, Volume 2, Practical Damage Control**
7. **Hazardous Material Information System (HMIS)**
8. **OPNAVINST 5100.19 (Series), Navy Occupational Safety and Health Program Manual for Forces Afloat**
9. **Ship's Damage Control Book**
10. **NSTM Chapter 079, Volume 1, Stability and Buoyancy**
11. **OPNAV P-03C-01-89, U.S. Navy Cold Weather Handbook for Surface Ships**
12. **NSTM Chapter 079, Volume 3, Engineering Casualty Control**
13. **NSTM Chapter 070, Radiological Recovery of Ships after Nuclear Weapons Explosions**
14. **NSTM Chapter 470, Shipboard BW/CW Defense Countermeasures**
15. **NAVMED P-5041 dtd 05/94, Treatment of Chemical Agent Casualties and Conventional Military Chemical Injuries**