Excercise 6

Question 1

(a) Show empirically that the information limit of 2 prediction bits per parameter also holds for nearest neighbors

In [ ]:
```
import numpy as np
import math
from sklearn.neighbors import KNeighborsClassifier # import knn from sklearn
```

In [ ]:
```
def create_dataset(n, d, k):
    X = np.random.randint(0, 2, (n, d))
    y = np.random.randint(0, k, n)
    return X, y
```

In [ ]:
```
n, d, k = 10, 10, 2
X, y = create_dataset(n, d, k)
print(X.shape, y.shape)

k = 1
model = KNeighborsClassifier(n_neighbors=k)
model.fit(X, y)
model.score(X, y)
```

```
(10, 10) (10,)
```

Out[ ]:
```
1.0
```

In [ ]:
```
# number of points required for memorization
def calculate_num_points(X, y):
    indices = np.arange(len(y))
    can_reduce = True
    while can_reduce and len(indices) > 1:
        can_reduce = False
        for i in indices:
            new_indices = indices[indices != i]
            X_new = X[new_indices]
            y_new = y[new_indices]
            model.fit(X_new, y_new)
            score = model.score(X, y)
            if score == 1:
                indices = indices[indices != i]
                can_reduce = True
                break
    return len(indices)
```

In [ ]:
```
# calculate_num_points(X, y)
```

In [ ]:
```
def calculate_avg_num_points(n, d, k, num_trials):
    num_points = 0
    for i in range(num_trials):
        X, y = create_dataset(n, d, k)
        num_points += calculate_num_points(X, y)
    return num_points / num_trials
```

In [ ]:
```
d = 2
n = d ** 2
k = 2
num_trials = 100
n_avg = calculate_avg_num_points(n, d, k, num_trials)
print(f"d={d}: n_full={n}, Avg. req. points for memorization n_avg={n_avg:.2f}, n_f
```

```
d=2: n_full=4, Avg. req. points for memorization n_avg=3.13, n_full/n_avg=1.27795527
15654952
```

In [ ]:
```
d = 4
n = d ** 2
k = 2
num_trials = 100
n_avg = calculate_avg_num_points(n, d, k, num_trials)
print(f"d={d}: n_full={n}, Avg. req. points for memorization n_avg={n_avg:.2f}, n_f
```

```
d=4: n_full=16, Avg. req. points for memorization n_avg=15.92, n_full/n_avg=1.005025
1256281406
```

In [ ]:
```
d = 8
n = d ** 2
k = 2
num_trials = 100
n_avg = calculate_avg_num_points(n, d, k, num_trials)
print(f"d={d}: n_full={n}, Avg. req. points for memorization n_avg={n_avg:.2f}, n_f
```

```
d=8: n_full=64, Avg. req. points for memorization n_avg=63.75, n_full/n_avg=1.003921
568627451
```

In [ ]:
```
X = np.random.rand(1000, 1)
y = np.random.choice([0, 1], 1000)
```

In [ ]:
```
k = 1
model = KNeighborsClassifier(n_neighbors=k)
model.fit(X, y)
```

Out[ ]:
```
KNeighborsClassifier(n_neighbors=1)
```

In [ ]:
```
predictions = model.predict(X)
accuracy = np.mean(predictions == y)
print(accuracy)
```

```
1.0
```

In [ ]:
```
num0 = np.sum(predictions == 0)
num1 = np.sum(predictions == 1)
p = [num0/(num0+num1), num1/(num0+num1)]
print(num0, num1)
```

506 494

```
H = -np.sum([pi * np.log2(pi) for pi in p]) * len(y)
print(H)
print(H/len(y), "< 2, so the information limit holds")
```

```
999.8961234639354
0.9998961234639354 < 2, so the information limit holds
```

(b) Extend your experiments to multi-class classification.

```
d = 2
n = d ** 2
k = 3
num_trials = 100
n_avg = calculate_avg_num_points(n, d, k, num_trials)
print(f"d={d}: n_full={n}, Avg. req. points for memorization n_avg={n_avg:.2f}, n_f
```

```
d=2: n_full=4, Avg. req. points for memorization n_avg=3.45, n_full/n_avg=1.15942028
98550725
```

```
d = 4
n = d ** 2
k = 3
num_trials = 100
n_avg = calculate_avg_num_points(n, d, k, num_trials)
print(f"d={d}: n_full={n}, Avg. req. points for memorization n_avg={n_avg:.2f}, n_f
```

```
d=4: n_full=16, Avg. req. points for memorization n_avg=15.95, n_full/n_avg=1.003134
7962382446
```

```
d = 8
n = d ** 2
k = 3
num_trials = 100
n_avg = calculate_avg_num_points(n, d, k, num_trials)
print(f"d={d}: n_full={n}, Avg. req. points for memorization n_avg={n_avg:.2f}, n_f
```

```
d=8: n_full=64, Avg. req. points for memorization n_avg=64.00, n_full/n_avg=1.0
```

```
X = np.random.rand(1000, 1)
y = np.random.choice([0, 1, 2], 1000)
```

```
k = 1
model = KNeighborsClassifier(n_neighbors=k)
model.fit(X, y)
```

Out[ ]:
```
KNeighborsClassifier(n_neighbors=1)
```

```
predictions = model.predict(X)
accuracy = np.mean(predictions == y)
print(accuracy)
```

```
1.0
```

```
nums = [np.sum(predictions == i) for i in range(3)]
p = [num/len(y) for num in nums]
```

```
print(nums)
```

```
[344, 337, 319]
```

In [ ]:
```
H = -np.sum([pi * math.log(pi, len(p)) for pi in p]) * len(y)
print(H)
print(H/len(y), "< 1.5, so the information limit holds")
```

```
999.5433792751933
0.9995433792751933 < 1.5, so the information limit holds
```

Question 2 Finite State Machine Generalization

(a) Implement a program that automatically creates a set of if then clauses from the training table of a binary dataset of your choice. Implement different strategies to minimize the number of if-then clauses. Document your strategies, the number of resulting conditional clauses, and the accuracy achieved.

In [ ]:
```
import pandas as pd
```

In [ ]:
```
# Banana quality dataset
dataset = pd.read_csv("datasets/banana_quality.csv")
dataset["result"] = dataset["Quality"].apply(lambda x: 1 if x == "Good" else 0)
X = dataset[["Size", "Weight", "Sweetness", "HarvestTime", "Ripeness", "Acidity"]].
y = dataset["result"].values
X.shape, y.shape
```

Out[ ]:
```
((8000, 6), (8000,))
```

In [ ]:
```
# Baseline Approach: Decision Tree
from sklearn.tree import DecisionTreeClassifier

def train_decision_tree(X, y):
    model = DecisionTreeClassifier()
    model.fit(X, y)
    return model

model = train_decision_tree(X, y)
model.score(X, y), model.tree_.node_count
```

Out[ ]:
```
(1.0, 1115)
```

In [ ]:
```
# Unique values for each feature
def unique_feature_value_strategy(X, y):
    def apply_rules(rules, X):
        y_pred = np.zeros(X.shape[0])
        for i, value, pred in rules:
            y_pred[X[:, i] == value] = pred
        return y_pred
    rules = []
    for i in range(X.shape[1]):  # Iterate over each feature
        unique_values = np.unique(X[:, i])
        for value in unique_values:
```

```python
            if np.mean(y[X[:, i] == value]) > 0.5:  # Majority class
                rules.append((i, value, 1))
            else:
                rules.append((i, value, 0))
    return rules, apply_rules



rules, apply_rules = unique_feature_value_strategy(X, y)
y_pred = apply_rules(rules, X)

np.mean(y_pred == y), len(rules)
```

Out[ ]: (1.0, 48000)

In [ ]:
```python
# decision tree from scratch

class Node:
    def __init__(self, feature=None, value=None, left=None, right=None, threshold=N
        self.feature = feature
        self.value = value
        self.left = left
        self.right = right
        self.threshold = threshold

class DecisionTree:
    def __init__(self, max_depth=None):
        self.max_depth = max_depth
        self.root = None

    def fit(self, X, y):
        self.root = self._grow_tree(X, y, depth=0)


    def _entropy(self, y):
        p = np.array([np.mean(y == c) for c in np.unique(y)])
        return -np.sum(p * np.log2(p))

    def _information_gain(self, X, y, feature, threshold):
        left = y[X[:, feature] < threshold]
        right = y[X[:, feature] >= threshold]
        n = len(y)
        y_left = len(left) / n * self._entropy(left)
        y_right = len(right) / n * self._entropy(right)
        return self._entropy(y) - (y_left + y_right)


    def _grow_tree(self, X, y, depth):
        n_samples, n_features = X.shape
        n_classes = len(np.unique(y))
        if (self.max_depth is not None and depth >= self.max_depth) or n_classes ==
            value = int(np.mean(y) > 0.5)
            return Node(value=value)
        best_gain = 0
        best_feature = None
        best_threshold = None
```

```python
        # calculate the information gain for each feature
        for feature in range(n_features):
            unique_values = np.unique(X[:, feature])
            for value in unique_values:
                gain = self._information_gain(X, y, feature, value)
                if gain > best_gain:
                    best_gain = gain
                    best_feature = feature
                    best_threshold = value

        if best_gain <= 0:
            value = int(np.mean(y) > 0.5)
            return Node(value=value)
        else:
            left_indices = X[:, best_feature] < best_threshold
            right_indices = X[:, best_feature] >= best_threshold
            left = self._grow_tree(X[left_indices], y[left_indices], depth + 1)
            right = self._grow_tree(X[right_indices], y[right_indices], depth + 1)
            return Node(feature=best_feature, threshold=best_threshold, left=left,

    def n_nodes(self):
        def _n_nodes(node):
            if node is None:
                return 0
            return 1 + _n_nodes(node.left) + _n_nodes(node.right)
        return _n_nodes(self.root)

    def _predict_single(self, node, X):
        if node.value is not None:
            return node.value

        if X[node.feature] < node.threshold:
            return self._predict_single(node.left, X)
        else:
            return self._predict_single(node.right, X)
    def predict(self, X):
        return [self._predict_single(self.root, X[i]) for i in range(X.shape[0])]



model = DecisionTree(max_depth=None)
model.fit(X, y)
```

In [ ]:

```python
y_pred = model.predict(X)
np.mean(y_pred == y), model.n_nodes()
```

Out[ ]:

```
(1.0, 1013)
```

I used three methods. The first one is sklearn's decision tree;

The second one: Iterate through every feature, memorize all the unique values, and use them as clauses such that if more y == 1 have that unique values, predict it as 1 else 0.

The third one: A decision tree from scratch. At each node, find the unique value of the feature that yields the highest information gain, and use them as the split for the node.

1. number of clauses: 1115; acc: 1.0
2. number of clauses: 48000; acc: 1.0
3. number of clauses: 1013; acc: 1.0

(b) Use the algorithms developed in (a) on different datasets. Again, observe how your choices make a difference.

In [ ]:
```
# Heart Disease Dataset
dataset = pd.read_csv("datasets/heart.csv")
X = dataset.drop("output", axis=1).values
y = dataset["output"].values
```

In [ ]:
```
def check_methods(X, y):
    model = DecisionTreeClassifier()
    model.fit(X, y)
    print("SKLearn Decision Tree:", model.score(X, y), model.tree_.node_count)
    model = DecisionTree(max_depth=None)
    model.fit(X, y)
    print("Decision Tree from scratch:", np.mean(model.predict(X) == y), model.n_no
    rules, apply_rules = unique_feature_value_strategy(X, y)
    y_pred = apply_rules(rules, X)
    print("Unique Feature Value Strategy:", np.mean(y_pred == y), len(rules))
    print("Number of samples:", X.shape[0])
```

In [ ]:
```
check_methods(X, y)
```

```
SKLearn Decision Tree: 1.0 91
Decision Tree from scratch: 1.0 91
Unique Feature Value Strategy: 0.7656765676567657 398
Number of samples: 303
```

In [ ]:
```
dataset = pd.read_csv("datasets/water_potability.csv").dropna()
X = dataset.drop("Potability", axis=1).values
y = dataset["Potability"].values
```

In [ ]:
```
check_methods(X, y)
```

```
SKLearn Decision Tree: 1.0 775
Decision Tree from scratch: 1.0 755
Unique Feature Value Strategy: 1.0 18099
Number of samples: 2011
```

Hand-written Decision Tree has used 94 and 755 clauses in respective dataset - it uses the smallest amount of clauses The unique feature value strategy uses the most number of clauses, but achieves the lowest accuracy

(c) Finally, use the programs developed in (a) on a completely random dataset, generated artificially. Vary your strategies but also the number of input columns as well as the number of instances. How many if-then clauses do you need?

```
In [ ]: def generate_artificial_data(n_samples, n_features):
            X = np.random.rand(n_samples, n_features)
            y = np.random.randint(0, 2, n_samples)
            return X, y
```

```
In [ ]: X, y = generate_artificial_data(1000, 10)
        check_methods(X, y)
```

```
SKLearn Decision Tree: 1.0 439
Decision Tree from scratch: 1.0 425
Unique Feature Value Strategy: 1.0 10000
Number of samples: 1000
```

```
In [ ]: X, y = generate_artificial_data(1000, 20)
        check_methods(X, y)
```

```
SKLearn Decision Tree: 1.0 385
Decision Tree from scratch: 1.0 361
Unique Feature Value Strategy: 1.0 20000
Number of samples: 1000
```

```
In [ ]: X, y = generate_artificial_data(500, 10)
        check_methods(X, y)
```

```
SKLearn Decision Tree: 1.0 219
Decision Tree from scratch: 1.0 209
Unique Feature Value Strategy: 1.0 5000
Number of samples: 500
```

Question 3

(a) Create a long random string using a Python program, and use a lossless compression algorithm of your choice to compress the string. Note the compression ratio

```
In [ ]: import random
        import string
        import zlib
```

```
In [ ]: random_string = ''.join(random.choices(string.ascii_letters  + string.digits, k=100
        random_string
```

Out[ ]: 'd9TNU6v1HCLJvZ9GamMOSBRdfNsWchx7ePK8mucLhYYepBhS7W3t6Jo4jDQEv5jlENTlKXObrJwPfLOCc
VB7QIvmig5tusFYraXwVU9P19horQJHmzVTr3KgargYS072CQ2fkptmgrYBRXMTnWTqXbMZ6V4XWTkdy0z
ijQe3P1j35QnaXqqPcb5LhcFDomF3bGLRpP5ropR0FV5HXQ13tYlnqkUf2buOpS7vSuibuFBRodANxlSUS
Qlo0iNbsxYKSIig2n7JFu68jr0MNDvnsUCcBXfowRiv1fmPdYtlqvcdglBCrngxYDL8yOM1v6DFgcNYLa8
767DR3sfQhVx56U0IJnXYG7xvVVT5MAw8eyZA8K23Gd2oW27RCvWaOzvbUueNLF52qCNMUOg20fwLAjPaF
JmjvLKinrmEREs89J9G12Dka5tBUG0vjOooIa2gBDJ4GqxDSVdsxKnPme9vn36kE58TTDb4jT61erR4XFj
M10ZoLT60KlZoF2p9xFjBq4oH4rBxONdWJlznM863FXvCTrwHdAbletVvV8LL5Tkz93FU7XumOE6gzFW26
2ZryQq2l4q6RmX61LBEzNwcHQxl3VarkCTPV7qmpFDbIXs9oTQgRv18DMR7IIqMoZAPz1UD2X6PNJmMzu2
3fMLMWH1wJ21J5M9wucXKo6ZbNc0RXmPx5RAuCWV5ub5HQRAG2hEEauTXhFFviCeky403d3CQFAneupfl0
yLah8TxPJEoWOi4Y384LqCwSLsT4010rT4EDqsz9oc7T7In6BoxWYu2NCG8ksunSb79poa5EZRJpfcmKEh
xhbDHLS0zQXdjRKY6NBKfpN9Xr9mt48YSlzCXtjtW2R7CZebl4EtFUCosI2nCsD1IfzOIHKf7ee7cLWgo4
8gBUehKk8Q2PgKwfrbakYxEXlOxIMuxggPofhoXvM0ajfqtdqAvheKSU35sUZfVBf1Rf11Ft0eBJU06itQ
ufpPgcB6qBvhjp4w6MNRXJHaX0Ll3NQJeUvlCTexNT7JRLvTjaZPNqJB2jJY7p8mfUMq2zETDn9lqAqU7N
GVBMsJwIlbpHTCGwBcz5pMJIkKiMZTB3aLfUUtsDbDS0IIb9sMTVl37RSR5DYRzTwE6kPJKqgJRpB0GnR9
gx19Gzsa1RqbJvi4lrGBnKWbSvHJOpE9JttQWU9afbbEbZiuy37mdp0JFhfhMju9AQnPtuLKmFiI8ciD7i
GOJTSKImG6O7gyuGU1eP2flFaIMnQvMB5tgsIZWdDgCR3B6dEFm4Po6IY7WIKv2UbtQEfniuikawfpfKqa
Fy0JIRu2w7RlUsHEutOGK4zOABanikVyhYHCuqulj6jJ7w05hSon051JOTah9tJvGIy8E7aASfaSMgsM0F
3T0Jawh9cPCT2bwCYoBn33DemP3VJPkpFcYiEtovqy1Z1NFR6KzJy6deAMeHy6DMInY2MBqeuudMQzpAIa
mhdnmBI4zRNgqbZkmdMDYUE2puJ9p2m3raRoZ3KTtMbttfnXXaQexRy91PxHiShcHqVDrBsBesddh2iYVv
rNzXPRRYTeHtzITTY8okMAdZZp2AbjDb4H6r4QFi0kDo4us9MbfKz4KbHEMeEw6HutMQc3wFfSsxF9mCek
F4SsOWVYgJaj6RksitTeqyXb0XnpyNpi6PpgfzKMNnypPC9Wgme3KN2AUSjmgodouUAv31qkyMNf2mwexE
3KwgYdbg3ydsxOrJxOgrjOU1oi65Wer2Rc8BbsTJnPq1b7orF6K7dH63EDUFOA4mKSxIJyvB6RxoOqpBZ1
OAUhs9zb0DPMKPgmJzXKKDXWBdO4ibS6jxkg7AlL0mMutAWV7WBWOYa3DKbu4kMq5CRGYQojPVrum4wKDw
U2xQpXtCRu0LTIVg8T3A1GJhZ7f7OtNjfajutaQSURJsDomjZXtjAHzM33YzprMIvAiqwW3lX5P6RhBQWw
3HEiNnDDVPJ805kMLiWfHJMHUWFIDGZKcm9oZ3oDrsXV4mI3PWu78oMHAAt9yQZuWSrW2xmpNKyJPpBO6k
K1SBKAMQwbAbQaeUGbVScuu6wuGODOz1bUTI2OIh1PR0LcbsNVXCHK6jeB1WQ5D8KX1CLnvSkw8Nx9KZuw
AAEDObPOAGhZjyeThsEdH1RvAjTIvRSMf9E6dHwnMOJYUDSEl4KpFYfBmpxBwV98vKEboVaQluIS5egohL
IOduqD6S9YmiuhGdgKM6eDzk44S0XZzN2bydRGmv1dfk2rk3v8a7U9eAAA2zPWdobJBiBHRqkjLLsoIYBZ
u3LMokcYGmyqGLfmfbN6Gys3VWWpX92v2lXQRs6dMoRxj2PyoRlvYcFilhDHhbbbZaBVXjuC1bE1DznVpD
oWAg3yqY7B5QsSl61Uavm2BrVonT8QN8VYx0xRKQWAdtoFpsfcy9IsHI3QGBQa6ivatFopsw8qeNRJTMM1
eSIJAxIHj81pAASWwrl36PTAc8mvdKNzS4AOACqrbrWT9mnWgjioImn1xkhPZPOS7Tgq45VQ9yUUPc7ORa
VNQfLHIidOTqOGae4Ufnb1qI1tPLSm4JQCsvuO6EdXZpD54VnrIfhCxkEcfXhrnmZ3mqJdsUsqbB1tMctc
O9ialmUuZff1XVnNre7P0rCAx8J5r2ZJNGDeYCuRFSIYt9Dn7FrC1mzKrMVdgkLHrwweLBgiNHEYBzSWnX
UNQhGv56KcaLqPwiZe8hZaVtiGHIIoTNdn6boMa9qoZ5eP6y7GupfAZTQrHZf9dDLcl7avpxvGvuJiSRfw
hoD9Jw4ImdvknRwMgYEUo4bYMyfxuurkurmANUFrCeI2yKCWYMdaQfis1l9Vf5L28l8mnkDHnvH7AnsoAi
amkAf3pkqqdooKh1i75BT2e8NNvARGUdswjd2taCqLVMD9xSGNhLG1Trwcu583FV9dOdv4TXSAvtyJpqjF
uqvnSAUtUPi1dIeAvIS1yN15TMw1sfY6R7z8U9VCD50Wc2sRvNwZcTEUdaOyi1gnOU9q1YozABnihLlI8x
6yOWCpEkkFG1Zr6mycf1WZMmsy9NVzlhszvBdcxusKtvUeOEscRY0wmbM2IOdFYr8wvctgZfz4nIIdaVM8
qRidbKjMUJpmecLgBoKx7JtCVq9vKZtTajsOpd26ZdprW4kgUXihjghAc8DonqDTIZkCkBO0gHa40t5Q7X
iAp0t6Mz2Zq718ZwYjI5Vr5TqmtwXObaT4K6aDK6rpE1GoyHHdKFavatFTfBi8mokkQWlgDfNsyr1Y9wmN
B7XopTGYfgjSp2SodzkrogBtaJAAiALcXcmdprXnVwPzZNBlbonLpAhVARwTduXFW5bfrzEWQFmmLDwOWH
oVOHayfFmCM4oYy6TZfkrikjrieEJdFMRR6lBAJFrD6LO2hA3Ciw4LXyXqsTBuRumcNmGzKcC5Ad8XTVNq
NpzgFml7NVriAZl9DUPULkCkPrp9CJGkskKstW5nHjDlFScGB7bdVZFynRtcycW3sBS6LB08Uh7TjEEdUO
Nbq8vSCyqItmpNh0M0uizwr71txxEpGxNaWUFPwfv95ljkPEcWuheuU0yuxZayU76ss11mEszCwoXhmY1I
bbuAXRIFielivb2z5q1jVmNoFK6LtZAC2SvPhN1Ttz4P9ADAnv1WavwLHdFReGldHJI7auVlFgTActCmPX
pmEL0GMOYc56Mfry1ea2BXSZd9liqFFBDfqQPG0qwlN1HEGABc1B9CDljNXZMqim1sPI0rpwRYTb0imiv1
WmNBTJomaqdozoAKJb5jshSbrtx3pDrfa4I6UxnrWRyN22i6hLaJGZ48CNeUYaSFVQUQvnkoKIUBNsId4v
2tN8dNtuV1fzO9fyxgcGCOLllFcqcN7KMFNFxSKojKURWUaSfi9rv7UzfSBuOOkjXLf8etYhLjKBWH1WAV
uAlYpy0UlKsL5YZA3Sk1hJTfSWyCmpSUHkYXa8AaIlcjgFR0ejZlAdSctAreNpnaFglKBtsMuTSSWwwxPb
KbIeZV8HCmw7y3OaWOrcjSX99elBBGbltRq8hlgtAqOlveCs7hHpCie011d3iPRttJfACMq5qRcG69LrTq
BMEe7zF1t07vGVGvSy0YhdVLTWNK3nTeXEfnE2zLkNHcbVRgPvngyrNYPNpOBc2cOJXnpxQY3Sadjy40FZ
44OsMS1P66wPbwcvoNfvJtxL8uhkslN3tx5Ee4FPjGg1Vh1BXOKpbZCX1U3ipyHPEPMj4NmHUEWrlpLpvq
rNfAQgUJeoBZErTQViD8TXBaKlbHuCQR3hENIeaFcCDhJxpvL5sxGF2NTibltrYAf5qnZ4znK6KTkEklOu
ZRdTDW9wRzlxnusxVVJwDPGakzEH9mLY2F2MkjiY2EJy5jXBmaqzMZyYdmG4hfJbTo8VIpCCxc9zIl399K
IVqZQgEzG5vBjJ2oXESQPw0uBBraYZ5n9LWlgPgJKOTCJ47vl8qlIVsj3UqNi5RYsMO6O2Ns9pKiOzUZHJ
6pu5ahPRypSnWUeFkXCqOxkvrJDrfGJqvXgFtTxUfQD4ykhXYFrpQHQwBSoTBeGAhQKqO5c5XCYgxQNapw

5nMEtUkmmG21sxBdLA6zNsrdUhh6HtOruvH29i4IzSHCtIedF8AvKP9woFdUlYzerBmNOnUtHUGybFf4GC
yxv2YTNmqoG9C0R6O4Wik2VCfdQO0hyDN789qgTD8yAzRrceBN60uXV0HuGhmFgRobEXEonubGu7yVZWHY
FRWpjLFVblsdkjEKK9YUlWnfuEgDNHALgFpAe3SyrM4UxzVQsFDGMbtJWawyCRWlZaJSatjP4qqBoQ0LGp
4DmZHi5kUS9vcMixKqEFYXycczw7GWLDchK9H4uYAQDesv8BOrvjuDsRKNuEVK7lqcNf3ZYI6AMP1DTbye
oqhXK3VHaneGhYceEGqkhxFSvTxikuHpYAGCcoMlUn1Btah4L7Tjhk0AoKYt9feUusRiVHdWerDwfl77GV
XM4A7D69BveHuR5h8KxGaaqFnlRFUrhJynqbSPoEMwhgDf2f9yJPFYFSIxKwOTYXheADxqagN6mqGfNxxG
GosDlU7ybwVKkERBYO4nSg3nfqoYFAXzWwqkpdUsKPTpa3o4Rl72lGA1cm2lvwzBBdxwUPbxt3ljl6H8Uq
3mIBTjz4BKyGDJHmCFNg1Wol2LHtOQEa8amgvtTMuXlYj082KHPbcWCAeAZuKARLfUYwVcdR6H8XIZx29d
iGBTajnIyK0MEgv9KCWdcAxC5L2zeeRBorXgH150iAQQCJmOc2ZwZdE2jbdE5IwDreNAORwWdYfWy6G6Uu
hfdnDl4KuX32pKD7myO60l7l5wur3hhNclbQf42gL3GrLD6OYnFa0vWXltJtoFl6tZJKd5piOGhaCauWan
C6wQpk2PgHfFp7EdNRpHarLEKyPME2nM1vHF4GCJAZ578a2HASuZxZZhZUyhgQ7jRQ0XeGSz6GSWyHj6Ep
mquYSLg6X3eXilcaa3qhqDkXnHbfv3evuenT64bPlek0hc55TI0SDsNLUn97Mez2VeSvusxZEdTk05m3dg
rdfSzxdA6HVEOVZZ4JjRymBVVrfu3PkjUB1Jy2eg2iZrsqQxTtkrs4C2zmNFAmgGv7wjEL0e9DIEnDPOT3
fgCiA9SZoOxQSN1Es1uAfH2DOTRqOBpWqQO4o6S0jrhi2vIS7HPfsBvHuglpzMdZX98PKJ1sFwMKgfYwuA
h52CjrDQpYx8pAGqsNkquk07bnBsjtFEchnyk4IrDw13Mc9gvW9tDXntw3YcZb2X0fzv1oDeYob6v8VHk9
b3cPEF9789jlVkvo0G0YRZztEcBRd7XMse8Vi0oXIpR8QF7MWfJB9kSUGQYT9qCEyi3ScpoLJjqHh2mrZs
dKwTBKWsw7EOrjwtjRKzgPREy8AjiVLx0e3o1QnCZA6sGx45mS7Tzd1sky06zOQY8j3W9SNeAkCuxMvLIn
zQIl35905WZrNiUs4RxY9UCq8DZL29PyvM0jtykDAWi2iEPRznJnggEe2BUqmBH8gDby2lzzT6vkqSM3gZ
LNjaxeQOXAsrQUjHj0Kkx59pftjFnqAwH4ROzg1w10H2uyd19W34Bx7rlvg2PhndUGTE7XLzNapeKdpgHZ
4D6OaSzfNyZboi5zFHddRg7YyF2GRGi0xPMTUq7YzGqlZpavWIhdx7I8uwqRq1R0MglXbhLHaO30lIyaah
MIEXXYTEt5f6KmrBzh5IRcfmJNySvNnonpi1mu4qMankhb31M6fFs38Oy78J5CJ4xZp5E0rF3BoBzcFEjB
E6fhMCdCOaukcS8oiGBwa8i1MNbsw33fANTq6V32GVzQ4Xy3Jk9t1KbLUZ31IZEfmPbZfdPZRl6LZeTXVn
CWJw9us1K6Nam7Hu3pwO37tTTMKOFKskg44yRryuwiTyAcxUIMDUVsjq5q5xOoTffnrxtbJ5cT0LGxI8ae
jSCehnjl13dpnx3s6EOGxbeZT6PjVz3ETWoyfYFVtcMrrWDu3gmbV6HkKgW4IGU4nvdsiCgaFcH75gBfLi
VjT79w1CsxVA0QcsOHt2JMdNZ75Dl52ZkZU9MQSJRqHgxAx00pwfGw6l1zEYJ2cpHkfL1Pip4mnbLYM0s9
8ju1BwgNPKzZk6p77pawRJVgCCcUlHrs9HbUbSWnmJplqteBp6m4KeCoPCVyjjYXLtDZonTdX1b2xn3JzC
dTevIjY3PAeXndmK2bUjgOCNvRXVlsGZdtXds3T9Pk3zSNewsKMyuLzKTTDyIRznEjsWoev5wMFrpEAQCk
a1BmFNCoBoSjZeG8kBvsVbg572NF02hVlRzHOMSTnaxbtXwIwXcV3mB5oARyYOyLgjfUDUdbXlBvhEYO5G
IRaFkM7bSTR0zM0SoxbTdKDncNOmx42aU5ZZ6bQf1PQ7xAFR4VahnaC5qh5GlLhyNgBWft6wi6P14L3n9J
DPPOPYlz9GHxhKrKnhTM2LJolYAH7RjW21VKDbVBtJbr6xmeDlP49p99KC2qsL5eLcQcBhBGTIc7MXrIfT
tpCh4QTYba4FnInbNOe4gB3LCKp2vxst7Uuh98j9K29g3mGEpwhBxZ85k5HMSUY0bW0Q8UEbITUteoCImG
RBgBLgvdWbO2cLaplxj5RUYEoogI3S4K6B0IBmNkp2Os2zNepxgi18NCTDU1bktBDcNe1kUAKlHMUtauV5
jinP7jP7W28XU7G1BGGkRMwzAWL5ItsZ82386kbcbnfwf6CQFNzzd1TwjU4VtMBdYVj3yjYOTcBmUKmchg
nLgfeSpT8NfYng0GW0A6RN6HBhcqJFyopkx7CxpYnYlWKRkZjJe655TimAEPjIqk1UEkCLxIMMzsdrEYCZ
2twgOxN35wh2oGkw9R4GESgdYEtUcWWLozCG7ZQplVz1c9bBg72s0dzIgA0V0poVlt1l8aa0PNWyz3f0Ey
T0iqmlvf7joS8hvyCbJehtdTYxZA86LGL4CaYpgZ4ShFZeNrMEK50L53uOoutfD4dKY5ZTVK6nhhQmPJyR
FuVCIj5lujRoWANukKiDghW88C0RFBiFANZDvAiaqKQT7K0Zcci2mT6eTcp2tJNS02IVzAwP1sivbdz0eI
5yFwMA1cPwo9YKF0SV9IloKaMcHa9KY7mAucUAe8JYgu99wIIbjDsRJn6lrp3Wu8OdBeqvDhjg99nyMrXY
xJH7ouXcGgItVDi4p7N4bY4Z9gD6RCD4YnTD7BMkOkPPcSKs6AJSaqYjP1DZ8FeUVPDb5fbvGNnyV6I4R0
x9uisvv3d0x6hYlZ4jv975GlN9Pl4iGF0kNRqwFvpg9YHNSzxgrqTFfc1iyORcnFBXGSEiAL0D78z0Ai3D
AzWxFyvRzJTwLlruM4ECP2skV1xUzAoUu2By0UG57ZaiZkAxjfxcn593wlmhaPKlHWq2gPn0JwPCTuJspb
9JJ0aXi0Vt6qsnUskk1nTPi3unpIl0yI7BN2MdWGZuoRu0rv9ZEqUzY0Mk0hvEkTk3mq9iplCB8zCPjsu6
dGJcduhwvaJ0QNGD1crcsrxpIwhRFZAo9ToskPxk9nltyQ5tUR3CTrzdnxe2Mk15023E7SOPSyww6G5UkG
X0Z3q3N1x2LK3nSs2a1soGZQ1tmapj76TONLd0HY2sM7lbBoL0I389tZ0sg4q0BcvpeXnkBavSIYX1Plh9
MqOWMj3LgOMreChyPB1CS93X0PgBsgWJGIzElvbLFcI2rimwTOjHK4wWXGlb9bW7k7lS2oaVLLhH4ZqlOm
hbgTm44lxq8jXbbbBM3uY0Ux1H0FsyCDthFCADLLkS77JPsl1OAYdwr2rOa4lJDoN5lwlRs2YTHQriAmFb
HYnnQ7raI5jTbRJwtUcJiwASiMbr8Awuvkns8iMMJRdB47TH1V2Z5jK2gsnvBh8OPMWtyb1V7zmht1PnaR
osi9MXUSwKD6A2E2ezChRQGXK6gyqGPpGHsIm50Qy8Z2oHFWRxQhjXbq9wG7IBYQntZbxqQMtq4MnZ6seT
MiKQtILaH1oGirIUHdIILhQZRtS1WqvHYNzxeZIpH8T3x7qy3JMKLuotKPwADbuEACg4unjmoxbeawiiXc
ydlJ25lCOqV4aVUNOkNxF5QnuHW4ZbPYSyhCpvEQUt4blo82yHs6LArCcpXDtJ9eSfL5XnfNdKfKp2IIzE
IanagyMTkRB8URLc1iAA2yHKHaFhgnBDwLS4Ao42tF5fWrqsnpOFhTxrCkG7QSik1pWJ3L1vQM4ud53ybM
QbFOauEsae5C8J0KRHxy47TRdTR61oYFwuTCvGfVkMNgFOz68mQBafi7q1XF2ORLfhfJZlXKoFh9pJVBFB
KML76zToAbnmWN0iGF48MPyvdHGwIQhFpdTAAF5P91FLbqVOi7Fp5JG3HiUS9ibyNG2VmilsilU689JhEQ
gcTw3sSIhSeYSkI6Wp4J2R16Arel1qrHOQwbv1fYkY5PMf2QmIXhHQK5FrIyhvpP1LqxaDluhMjh3YCYWn
gqVfglqnCAKTRfyJpThWHOiBZMhHZjw6gsHaoNBfPnTeErzxl8bbiWdTOkmAKZXludtzyGiGgy8PNUMrD4
D2ht0FvxT1Q9abpGulmKN3QyMFOQt8unWaQdOSuhlzVNAsnyYlXnpSBxrTzHhT53ksxLgO0L98PxkFkNZD

PSToE8g7NMxPKHm8DZl0iDmVe9i3pqgBeri7H9qZ5POasUps4lcswAyfZ0PNtNd7CrD3fIQh0F0G8BylFY
DAhhg64YGQ177y4Sfc62yiGJZFUndAV4Qfqp5mTNfeFH325ikiHlKBioTQroHl7rrDZju9oDbfgpVuGja2
GQWMet3LmzMTckTSy0WZyuLoIPrZdtUfMHf6quYYf93V63gm0THXPcfxgSy5HzSoN6Kl4AfDqkdrF4yW1z
UKtlJvsD20gePbFWBwHoQEOQIgMMF3983cvRttnSRnJ7XUUxuxNfdaY84grV5B7uzveANb1ozMQ3AANR6c
Boigdm4w4ZYA8TUIh4p7Jc6yGMB5edBXtkGShvejxTpfPbgkc4xldqQISrw6NFYFEg3zgDrqx4wssu5URp
jdtOndqhL9XnKRcimKKzAlrsEn405Pf9FTFAyVMRR4zEdYaqyuVWQQvu5KS78rS2TtsbKAT32WPyBfZpdR
gl0wWtHqFHgH707Dh98lcIjHZQg7D7671iYqL6wcGwcMzEOJ3tWMkiYrUFNBGprDr9MyrrW3AA2at1c5dd
orbb0c5GSKTDrePtuXkIIdoKgljXEwGCl6o7Cgnf0evLi6Em8yjJ8gf8KCc2cEeOqaadZkW3fwMDdXX7Lh
hyHDRODUhnw5dT4GJPRVyuoume5I2PZElbGyeaZFyWiZcUs7ZPFfloQEAFxrb3HwLnmWGxEJqOdXa57y3S
RCFQSZ3BYNSk4qZFueST80GEIjKf3dn9D9sifEVjSZBgC6x9tM6hJN1PqO0KpCmx9nHpKZGB0WgxmOAQiM
XVUk7muXT7WJbmMPSitjadO0gqRmWWgULEeE65tgWUlHnj30SPHYdq9EJrMtKSO6etDDJcdE2nRRYcMoyS
4pXqmPpnzgeu0tL57EJs0GbBk60VVVVwBPZs1rarSFVRJJMC9FPmtRQmL8A0KI6sKMndyBdMNPTVNns7sJ
wKmTpBdtTLxadsQo28WrTOZTsf93VrJKmkLbbcUTTQMy0PJtmrEcX5nbwkJsWA84P8qnq3vG5OsIGyAH0C
Qp0nnfOPDJufAAXm9H2iilmED8QaszIOXarBzCf20otSvA9DNsB9DfPiU7lqdJT0xRuhyqCs9KVWSfNKFE
nMW7OWdOwBeEWQ8FIaZ1uxC60ykdVxXkVllOhRHHCRtKCNdFjucQ7Ur09watIX0Ar8AD4AF8AFdIp2erlF
idSEs8AsmmLfKDrgME4smrPzjB6GiniTFmVevpoYwwSCxsc1CTsMAWw4t8ofOuEZHSZOmTseHEEwqmJtYG
1xm4gIk81OLvifJqOCKSYwxp053bDWCZIwRBHyoKDKiB3FUi5sgIhZebNAHfxMNWSPDIM7xkGDulSG9I0e
S8gZsPOai1gm8gaPlndz7kdBHgGtKVxiXMG6JYw5g9hRafkqXFd3JfSKZOcKbU9tGT8m7h8gM6WP15w5b2
Np9UqzLBV75IzuqN6Z4D9abubQnTv1wLIdMqXEtW5KEBgnNHsipCk5HT6kmr29MLtxvzUoPymHGacGHoBC
jc1fpwAgIkUz49QYyZoXcHuDoyMEITbgoQY9I0l6SQZ9CihS9oDp4S4PkLAf84PNxrwFhfrFxkLu8bdjST
bqXPmxeTM4yGt1EfgioOBWWxITbtLLH2NE0Cu48zDj5CsmlSWgYwMLvX7aIvhyeUkUzQA6sb1J04mLJQyx
w2a48WPh5ACxwecKRP4PZ32eTKq2T3oDhhiz5dWXTN89WcKdhtwLjXakVWhUdiMrCPox8mwvdYHvRKTaOt
vTlOr7svR0BsalWvBnp6jVIHEOTHjvGyc7yryjE7ajHCQfDYOgrRJGW8T66dXaaxqpd2dbZv6CHtTwLkdA
tiP2dg2kQZO6SjXrUuUhQXJqGPEj8B7SLlxbYRXil5QtJumh6LbEhQXxEJtoCYJTiaVJpKqGYziLwKGiLq
lfOYtRG4Bx9xWf2loc4XMea1GZfITcgeynF0YQtMBh34vnVxtThvba4JEUYx6kFyOaLhSdohdLJNVJJD19
vx6VmQfkHTAaksDLVGNc7Qvm6IystUhZSUNPIS344uqb84FIRhlw0xYP0TxM4lXz7o6DnhSzaj5cVnlRBu
1cIUv9oOzzXRJ0STSV7g2TyNTQAdv5KRODGCLsJEurDMHEn9rI4Qf3Nm1KWUBtqllL1KWWun6Sb6WubcmI
vLNNoeqeMbCiWviQA8in3o4D33HfbKMnWuyeKl3hyfgG3hMn3n95OG6JLm9peGHyXHAKmupstuRAoKJc75
xWtwncOLBFLavbFaBcMAKesX9lk9mwXNdAOt0crmc5357XegKlnvo749i0R0L2NeCxkos5AsblxvTs1U5i
Zbo6DCnqsbVDb3EMOfi5fHjC0YrI60awkTU4r0ZNHFZ7VvNymIggHmds74V5Ehjmq25PtXgn8QdWFhSUl7
9YwdALx6m08qBOPfHHToJCQdaAoHE8fN7mqcwWEvbk0OOt3vtqQLGUe2f8YsHrCk6C2X47xBvLdvjQ4Wms
w3pKgI9vJMyHxJ6d35kip4qI57JScOXe6CSc86pbLaGWrQG7I2XK5WbqCPAx7YIW4ziw6fAltYTQ2Io5IM
rUnRzyhhMnZoXgMl3jNJS9Y4EW8lCeqQHMW1XwniwDda9nqdIIj3xNHqPYUxBaTFbVpVatuocD2rmn0gdc
RpTXxJ2bmbLPkUywZKU5XGLMGPBUpf7ACf2lDKpXv8nupNClww7vgIdq6qG0KSq8JF6YpmVhdSsGgPLrqw
wGDHLA168jSBbsGzR24D7l0dCd2y5k6QuooaPHKBi1jTvvyVf2qAJyt7H0chlHXYAac7mbbmoN6tdDK8CJ
MNTxsyE0l7MNcH4OzCtKSzy2g56XOONVzKSympOiUtlI1gUhEpcwBwG2qKiy3apKdKLOZl4KkSFw7xBdox
cGs3u4z43Y05TepmeHyn3ITsM75w9Z8Y3FZXlYJO0B3lupEDm5pwF22agVlvq53Hq3L72rf0udfLDvfDvt
Pg69naTTpmKQR37et0n9FxVCAGIbTZuwDX6j6WkAc9yN5eGLnvrTIxwf48jc9qwTCMM9fQH3mQHjh1p3FL
svWI4FWjDdC6LCNnBMEuXCnFgjhVBBJWcAU3Sauf4L2ZfkdTn546BM8o5Bo6ZdDbhBV9M28zxgkCUwhBL7
UqMOGPNncCqPgsMRShJ6a932FqrwmxpfJgTTCa7wJqGVGFGrhSg8KdRXbTArnQbkMiczI07vjeqTECL16d
UwO2e1zOTRXYRstefI9fUxZn6fhUamqdjIuGEtTlQkorKFZALriGvjDEKGDCQQThojYyyVPVuTElSNhS3u
vNw8H8uZH5BJQpBE91m0CVs9dDuk73wbSoRHnFb5fSH5a1PBc3eyik8lNqgfJALG17d3y2FevhO7ovlCjp
uYk45eCcz2msUVVeo9EDH9kGfkXJnAeOoK2vxRqDft57T3VbtSYgrKOSzUMN7T4tF6UfmGx5xFqAwqsewH
omDlD77907qO2hAkCnhG3jyT8f4mx8DvglJsUPQgzQjI099rLlFWgKnOn1ZKyzkMcbD3Ywv6vmTA1ruy8g
eBjmqkZk0KPukPXjk92fGxO1gtQniidmK6jzfIfsO5IBrG0SVC2cWTKqhMdBtHcaIpCVBTJt7PdlYyxnBe
LE6sW5eWQPFYJ4W3EwvJxfvBbPxVGgi7pmqwfCLxCX5UVpxe5R1b7w9rBFu7DoCNTTJwgVQHFocGYZSReS
4v6UMeMQMyE2kg2SmFaTEW5wUyhN9gIuzw3qfrva7oq2p64C45cIOndtgRIKsQWyh5wFzVXRnB16VYdR3F
QP7xqTPne0DVBTGzMvJrhcekCak5QxFxsitPdB2hvB2AtBcJjsJAFmEsMTgpdZ8d54thXUjZmuzsRz4n9D
86tPYTrBEC24qmk134r8HqJMSYnGx2lq3OGZ5EXxoH1ihOIvvzAqXw1LTNiSbiNHOxGOugsK3KxNcugMoM
waQolyeywZTr9W90TJh2ShODftBPrzxIj73qu067rcWUBBMpneTujiSFaXcwXruL9ELpcWex6wIzNbgL8U
FOlir5gmQ5E8zTafNfYbTlFtANq82kh6pUHDLVPaYkgxxukQD0cMeOA6lm3NmKnK0nZfB0bwtm4XFhResq
JkU6lf6rbRNxRdItpmtMvaaJdIsmf3tUk9XN7kPkV2PeRNb0Jo69Z5KdeukrRFxQwUimHsmjGJ2vbVjmy2
1YjU6HYrxoI7RyQOJyu06hzDGlQbwY1dig93YSpCycMMlW4DtC8Wbif1oZnxT8WaMlkTfH88lThOXtGB4q
GwRM5yhVG54HN8f1Xj7b2m4TPeVluiooMSv9vlk3WLErZR57QZqD9AQgpLF37byC1KCKQi2uKpo5mlbfWW
9ycmVFQ6ewzDO4Qr9iNJLP2yzjkjBD80XJKmH8J8XwNZ9DCOToYXMgmyAO7fOqBQ6ZOth1co82svRJjHHK
6WjgEEkEDHirkhgxQE2kvOfmov9BB2fRCq4Ggs3WH010MUGzfECuwVAQhgikbJt2bmaj8ENgtx0eL3qvh9

cw7qiVDNVnlbpWoMt1i4Z2KfxAQz1wpIWaSSRAJ5zGxn2favZuXvODTH0VLXAGKJ1v6amHBbAwyYRpZiXd
as0DITdkDZiuw9mvXhY2Q5FGS3Eqxd3tRw9kWdBAAemnvES7Czn4FJUjhPLCSat2eQFFakJaLvaIroNzzo
6FCNUvd02OjcqDLwBDprVJqjjyrrOCNSpgvJhxAl444cO5yrzp9jAF9CxvJyFwvEQyXCuK5nb6CcyEs2No
VpzX0sRAi7WbUWirxdu1O90p4ADwaTjTIgmoxy5RZTWedkIpaumFHRyaimzITzTtKHNjy6i1BXVTbkhe8G
jZE3ZY36l0yzjcktQpwJyocHFjGxivbuwL9WVHqRaK7YMJaX87QPdoBKrWYXG2W0Mg8gbridQ0bimjknvI
S3z5wmDvvPockc2jc8a233GistqL5mkUGqocfqPKrDtXwi03zi0wLrPTRZrXzEUjAfxRdjeYpGBQPmODnh
97Zx09tpQP2o0a49xNQd9EmWxJ5ArOp9d6rNQ5uHigbEa32A89QIWv0i4v1BvEffUP3GvjyZua3b6s5ANa
MsrgU34FzmJeUDLk4O5M2diSmCM18ghDBZQ8utAsAthOFp6euKRJHamaDn2VpWwWGfwKRR0M6JMj9gp3RS
JmqkeG7nySUmApkEP9bjHf7Xumh0kC1nBgL7BXOphgUZntt9Lb8PVCijDSErAKldKLm1OVJ8IfbMW527x9
UZ5ss6OmnS6FBZb5i6htsh3rTuHGb4WSS5ff18qODVlCocKPCw1gz2j7qcFBAty869aQNfnygmgoD1O760
2rWwklfshjfE8RNgHzBD35JoZB187jrSupASgmBpFnaXNwYSrcAIFKkmI4MLeYPgJk4dv5pxwr2IiPd99Q
NvrJm3xT5KeAUetPn8qdMA0GOE89Q7QBwLoOW1Ko6DEAOJIvcG4FYai72rOqQftIdUzEnqtZEx5AcV5Dv7
jG14y7CiupK0LOlgi7jQ9z8U3fqdHUX0KQNH9dsNBtVHUJ3PUZBaXXCtG9ULszt2n9W9ZOUdRvTPhzgQ9v
IvpvAsykQwZkr8etMrNsURPyKB9RC30oSvuMKDyhfMkzG5hd1QQjPXEVqP04qpaPbsc55dR9Gp01I30FBb
no1tV9MvxZgcP00bS2ZpuljJVADJwNtJBXMinmfrGAwedYuTmFTilrU5zc3EZsyGDWwiYqhdMvvlSX4rMT
rOeySzURiyJm0cu8qZ6MsGldxnZS5Ig7tHeJF3XC0NSnz3DH8hNBCE3M2IJPOL5VmjmuVFZjUrS8Li8LSf
AaLJ1sK3DYum9sXBX8wmaCMnf1H2muiIBlWgSeL3DfIhZFKCts9To9h2pqjLcgLFaQ3im1jQCv10kt0uLc
OpcXqCy5ekXmUG3cEi8P94eYkyNIEBkBZMjVGPrBFI3pwihWwcu0769WyFEeHp1e6vmlEAHSWLCfUEn5em
BrltTNXfEF4yeG0GYbYQZZq3P7KWSvz7ssG1SvuMOFq2Qogzfhneh3sxLyIekIzt9znrvmlItki8N2MhYe
MSQvNLnqEU5M8X2T2KkfBwhViMoXGHUQWHsfXakKY0M5rXKkEGKNfbE8584e9GyPXBLNvoccbWUvPZ8Y4v
NMcxos8NA1nUF6ZoEBfBXht6tyRMWlDKAoMpg0p9lA7QOOhqf1oVnz6EtUQ4cSjufgaA6P8SsFZtOcQYFO
fbyPgjLFCf873MrUzOmGpy80LxAGAX40SRh1XcTxyNUlpTdQy3rfkGuuL8LiKAFwqtZHym9CrEjZWWEXvy
WNfvt7qK03saQK6O8GZfhlkYiKoIOkGg0NuWsxj2jo8igjGdnfenJtdzU8AyP7toQfSiX5imL93cPKUDBD
QVHFoZgRHtgIKk0Ufy01vrDmM3ojHX8FPpUHr9yktMx9CZxU0ysz7KuYhqxcQzdegsgmrKdPF0HTv1OKgu
O7GgG75USZD6s8yQk8RzPOKGg75pzoU0N4HRFzXIvym5WNNp3HZpzqc6EmU3LKnRlNYTw8PJzImT92r36m
DkUmz7z1U946dfgw3mREWZZ8P65o4HjM2V3ubPRR1VVFa1bAYauWP2VrH7nSFviYbcVwJGwXgg6N4fdo6M
yrf6wRPYQYCbTjSW38RZjSmYnkocsCCD4UwM3Tlv6bT78j3JxTIUztuxNm2g5FXscwjoeFAB4MrXy5Amax
RRJzQILWsniJCv0tNYulMfDOaXF2cbm9QOCKdH102YeHGCIOtrat4F9IdcFGkuJNMy78HYGESr3vPljJQD
gLVABEraCz2AnbSc3aCs54hTb5aIjSlPgriFKAylD2IstiHRPJruyocCpS7F5fhSj4BtTG7TFHjfhiIcnf
VAPlBgxnIhh3VXABtbUvPye6PH89ykr1KUr1wlN45oK6SlapEP4qyZxUNBYVZy1M1CCT5xjZutP1bQG9vN
vQz1jQNqqgvjBxdS3kYL1kH2V7W6JqSqeNW32HZcAVhUCsLPgLqGQwt61oBPVLJzingB0nWVpvjtHHt2hs
KoQrUuMKRW109C2dgsBNAXi6CosezjXFyAo4Y0t7dHs26q98KARXHQCGxw5AyL06RLKuAjKwPS9WQa3TZi
EoG7ZscYpUroaTek6kHAiKwMiwa5l0JBhqH4JlkaR09Cc3eelGI88g0udEpMGYOqtDy0eS7h4n4SE7QTi5
fZodRZ8Lp8UppChW3hijCoLAmtvGvez7zATUPUKU8BReZqa6l4Q5j5hX1KXJXEVofyLzkxi8qmQ6FP2SJf
4Vz8TzwGOkiSqE1q3gjRKRT3HjgjVn6UHjlWmDR4kaq48Lfz5qLNDFVBy4Yp68fp6e4I4sDKc6PJscuwkw
2erS9AZfFkUNYO4GFIcyi9dDTe9yqpJrx9FtKGKb1sHeWF2t66oK2UogL2oS56UnME4Z7FqHGjNw93QOMn
kGmt3T0H4Pc3sqkN14lmwfrCyOhvOE4BFt63KuafEcs2QCCHAcoshAjF5G0mm9ykrTYsvCeJlfMiIvq4is
8Szh1r1giz7McXlcAN4tKtkqHrEJN2tGKaSiTfQBo29icnA6JquhyJXqJltR5ShgF35dmezMmHfwb6Cq2g
nIc0XDX8fVpWBxi05C9dpQZqFJIh9hzaSOFQKIGFEGveQwV7hH9PVlGcgfoQAdflK9P4r1aWXE0Q92Ns6m
gYwcvjaPM3p5TrFYw1qS759z386oTsSeSTBa5zBEPhlgKGIh2RgZvGCLDTHsYHrK3JLNPrxppM74rr6zha
GZlTCFR3lj3sT6zCEZoFbiI8nEjO2GvhoLFh1oHfkyLVY8yxhTYHECuRKInCLqsJLIUKS7lhw4I7Luvn6L
JSsB8yECWobVfup27K3YksMewRuBBm7msAFKISimFowdhhsAr5HyPAikTQGQ0iVsM6AamfcwFCnXBXenTT
G7YOiHoHvLffKMvjX7ScDat8JWERZIBeTFNY74r1D56codryrzuK5MdouSDU2xKEmJe8bnvT46cklef7PT
p1YMjDFZg5Dmi8HLtbqUWJqqUvdISSVFcRhKjmn5Jj37UnBfCQ7g1nKR65y72rjUkjyGqHGJl06m0Opoc0
Ex0BJay1O9oznPnXREy5ChtbU8U2dTcDEcC59JZdR1WUANRP2C5kOGhM9q5slpfSFvmtQGvmc6cJxztpSe
W8qQrIC3D7PHG86Qss9JmgaUm5yxNc7UvPnVH7BS8zYFdD8oYg0kE50zWSP0mmBqPNGJLbFm255mjqm9xw
Rt6AzxOeq7mUz7nfIcC3O4ltokAWcuHGPGO3Df6BkSYGtnhxvhVuMhOCS52HTL9OENxxjsBTx5wVBRooBA
XxX6nm1L7I8GFlqVnSzKPjmknJzPRQ1UQHSy7c89JbEEd2TBUvOeoNJh47VyNKUpu04dsslDpWq1iQ0hbr
iv4HLs4iP1AzJpLP3Xr5Byt7kT7D8zIGTtyoYfmXCHqncDOnhBETZu5cOEcxxNXiLEqICzIbI3H9R7j3Yw
djGhaO5PQHSSH94mxw5pSLzbmgakwCEdn2JV0NDxZhjGfK6MeHxxdIspIhAwgENzgVXO5vZ25YN4XYnV5C
eW4cvFkJVSI7DtbyA6jOYB2lS9JEyToId9MZG6igXalvtNoQix0g27w48ISccAYVQlOaeHMMDcH7SVOp3P
pHUsXR1Trt62pWvMyFcGSUQ4J2hWEpSu18keS8anLtsnwHXEXiB8SY7i0Y4QaZ29JC2RECa2sYBTy8JiQD
1grocDKDHBWoF0IRj36qPLmHucFJtp5pqfzjIk6krTurniJzZCWgkBbbsPYWc1oSp12XSJAGYXxh61Gl2O
hFpXKIUHeIsdY9AlPt2Y7W7NoflfLXti6StMs6qa43ihE70vrVr14BWAaU45hj83sm9J5oC1ZFcDy2BWFi
0hEd1Wz7P00zCnDRS6CCVQi2Cu9hGErhRc0GyrbCWyhgmjUwKc7shq2qVTNRlGnoPuE8CIFF4rVUk52lRO
axx3hb8rMlI87N0xHThzdfE3vpS4YYBqNDg5dQh01japefeqBMrIXkmpUyF1WcwlHzDOzqj9qgAs8B8LDT

V3C2sgVeHgueQRYTHJI6AQDj8cqbDrRYAVJc00Uqlb8WJsuuKYa0OXHp2VknOM281735CIZI7mlp6SdhXJ
JZB0IORbqP0caBLg2NUsOGfv30D4E45OiJKPV5G1ChRyzvpqC7trxgZEVjBx7QuBv0GslNQx4pIcd3ZSkZ
IYsYT0iD3QT2rzrzoVzxTxyRtgY8DmqD6a5iKFTnF4aHkGMVYlCOwLqi5VPa9X0b9yaMNavmxK30ygzU4g
oq8eUh0EgJ2mlsumv6YbGD2HI8EsB8pTkdkEuTtQ3tS7JiXo7zRHR2x1CLLfpNoWzsVf7Rfy1kKT5rTD3b
gD0TJFeAagZa9igpvtjUVuCdB799autpQijIVeC8jvS9EFL2mvUFZO8GFSbenU2mSvpn0qddmJZHFfxS2U
pStdRVVIRnWo59Jy2kxLQn9Ej8gTZGLVUyKAUhv60XqK1LG6JWjoRdmu7hwQCOdwOxVdtipizM8KpGgrMo
Ow10MI10yDlEqV6mkM9z9R5ZrQ8nFxIr5HhkU5KQ4KdF6fA5Pkp2iOlkAgGoDuRDgCkayEuQ9Mybg6oCpx
Vu5ZbZzDBr0XeW0EgZq0769wLWsJIn5oufI9ZcjMbGVv7LzBq1TydnxIgfDDRXoUklcguxeRBePdZNCJTT
4M2CkLW53P3g3eYvMHMF0PmW8eEIOaBloR0195MSu4fqBe4pSglRCv5TYsoFKKz8uWihUM7jgvEdbQMxk4
guQFXG3On4WuYMHCyxHzFMlwsinXFycrOi77mQKJQ7EEnAbJ1BCyE1mJRzt9Ks2DG4UJRCbcT8R8PuaIt8
NPa9icbk7eHYmOwsV3umk2uCg14NdDQMSLH3IAzGf2jfps9AM3n3p4a0ZKXDWiW8S1kO2ozLJ4O0059vuh
HAbkNfC6EFJ66XgvYNwacAGOX3hpmet8h72TUaqvVoA8KLyx0yYQmDcIJl0Ofbv7k8BLccngC334X85MC6
FE5Pt9Yfm2OZflCiBHEDA4bkSW6JP0yctiPvJ2D0dG3c9cyJRz56bixrourleozlKXUlzNMu2fUM7x2bjX
q2CtcV0yuYovfHzTosVnano5OsADqnmzIR3PuLuMvFbkhLF5TB6eeTgnBajsDiylpv5ycyMJA2mBhprfU1
klOTcD6JYgBWNmeUeC86XEujyqDKQu5ydfsWUlqbAwqI8uf9bf9bWtGhXHk3qhbtwh0U8WxzgWNDCwRUic
XaDdhZcmbV24WKmM8vZZxSElN1fb7kYmdpGiurXCcseZSc4y9MQQgq7m2wqYbc64hVv2alPwnS7UVKUYNv
euFp5NtI4XPY2aLykrI3wzYwnId9oykZdmOLmDKINSib1MUl4LBy5TIoMAmQmmNqCSFIc3PlxiYVhJkNgp
GXENjqDMcxBKGS3OqsQu0OQVCrsx3gF078v8ot6iJdcNEPQ4jIoIUebi6HyW8daTzRMrQsZnXiDwbiwTrM
vbPh1j5sGGsP5AVrfHXn0KTTY2Oubd2Lwx15z4rPKo0YFKuil3DVknz2QTTEXRLKb4iIZOGmAqWz2tZNlB
nteduhg06QIy5E73WhZJkvWm0FIkjdXyjslJWZVW6Wkw1SMGJoxLSmqVvV1D2AATZhaIwqNRt5FZVkaTXR
DkzNXXZGIZAw9PGzIQfqoa1vMETF7fYhBBNIqL38joL4aWrUgfeZwqFQdgOhTQ91KiKeUR64ysz8ct2r5X
xYKDNmIlgYHE1dAfOj9gpr3MT7XckS2as43ck1VA2pijOJpH1w8rEwrTI0qP0O7gMhxSfQLPlgwgg0zE8a
lqXSdYTKrs72NIa0fYZ6ZBGpNHzZM3w6NlNdW2ta242wj451nk4zvGYSf0WX2cj4wF0XeuIRSwLchZahHr
K0YbmOSzvKUvj0yCGwAmYuvbSdivZJ2a7qzf1YJ6t8mluYem1qSDMAw7yfkoaHSEAeBHMEQXnkyiQ4WuCM
g2NOHT1vIaxfweufteDtSsF8AZeoh674J1iCKXc5pwgD0IFFBQw5nYaK9kNQYf5eF6LpcmAryqC9DC0KFN
f9iaXMZFjcMoxfEf1PzY8QJQWNhdZSigRytX4pTOUJDhe2vgliMUHIJujiNBaMSawczWibOnXU3Hhb9Wdc
sOuO9jwwdn9sUPfHrtvzVZdo79jUaiEVuTrBgbSZtNDFfyZYQWVoZ1JpV0REW5yYNbAfb9NMIWnVqgBeyg
LEiaVtZvBmjRclwxLnvZxXU9AYDVbJKq71lMbsVti5eO9rfjhZyO6nQYWFjZYiaZq6ZnkuBORDHz2ai0zI
F9Snt2sRrowW9965oebze94jgRBpNUoqDcCLpw5OXx0J8mMwyqnCOMNbC9ZqWuCU8mufj7k32919Rw1J4b
Ee8vsGZIsucL2uxwv1TE97NXVzNqg4uNXh4CVEDMtUzHnhULQ8KYWXfjGB3qAL8gM35FyCZbyNyUw7k3FP
5JTn5T9XwqRKiOc15Gub58gowlyDRviECNfc3B7ORyJvTB7fA5gMFW1WKqHc32hqRiEevsglgNBYH4oM7Q
wW0JVnbMNVR4PJEINjyOfKIUbFMQcZWdJNi9v5yjRnzV68fGZm4dRw6BG1mktm2irrO8uM58408dUMU1wt
bbHKClRsxiQDgWGODHT07xih1KYPRcP3M53U0Q52P5Vg7cBtVXAhGeCmFzFH4MkmlTDXz4rAWIAjsQyRKM
UTbUvt0ZrakiBpFvKt0gxGglIEO0p8Ab0lkwhNQoCxOuHMJUARyYuygJMZN7cnKTqnLd7blyvOhcM9XXEL
hW9OGbLrzQLOHxKT36uhKMWnRLzaPzJQzf5Xi2qZgJg8OdXbQPDgZpYL1P2UIaujjfsCnWONXvs2tLWxG2
lxAYhCGRwwXkv5guLIdMVBKrkOx1W7glMEHvOK4Xzame1QQZWPwyirub7hL3lpIsM2SsBmSocklhZFyPU2
nQzIbqZvqEOuxhSpRWOeHFsJN3TbRbq6RP0ssQXCka4FRLkLDTRmSgICY8981im1dDHR1weNmGV7MJkNnD
81U5JLN0kDtQtx8pUCnnwlYDcJjIqszPf0TKhvej8sCzOwNlxv59k9CJs81NYrccN7iFkOdMsQL2OMwouA
y6aHRVzAZmD9CtRzohS3fTL5pzhJ9iBwXjeGeY0DCjSzFTsCCvSS8r8qx8jz2tZitND3nMveT98LG1pQHg
e6TuQ8lTrDpXC8lubSwCHP4orSbLbqaVggdIisneDSVvf2GyPUR15miUHHdTC28r2e8uQb0PAK6fEwlN40
LtJS32Evyra7BZSCAbW26smam0ryqOdA4wu4eHtPQpk8NGDygiB7AwQx1LdqKDkiR7GqnEkUkTVh50CAoT
CUONYP2ulQkK3Fsan4hj9GmpDl7xgWZ9gqpOQFbwcjhE1N8qiqshhD6GG2Wk8PVxLTOQT5IIysyXKIXE1E
tNucQ9tFJubHk0uQn5KRG5qbmyx0pFmWJYbBnacLCTtlAkd7PrPt3XOY6zs759ZRoLU2h7vwHOUMA1mDSn
ZIyxrk8weYhKrhX9wQqxsMbVbL6KByORWBjTXjR0S7jHV5EIAHx9cLFoRWXK2Q2bCRUx78tCo7xTc8bJAe
zNwWPf163Ylpovvl5d7WC1GM9WNxMWOB5HcL6cLk4szRBlESMFjkQKzjEOLWf4dCCUKkJIqe9rRG9bsTE8
46pifoRoAK9MBTqD9K0xFWT7CBojKu2ZNjF8tDiY6AbBr5NpkZ0FCERcnA7KfiGj5iwCFOwb0s9zZqXZNO
mwgb269K7IyM0giDaqhAeNLcC0lGymYhWSrexalkpQ9q3F2Nkjj0DpA0ZZ45rHJRPBH4REleqte4GJ8Gnk
sDmqQAlZdV6pbzJZKrXCrg9EAgmG9nXtGAl8Loy0bfnNJTNzxatxRed5ZYFkV5CB3vIBzpTt3Z28J2JHBi
Kr6quikvXWIaQAeJw1UfYEb56XSZGBg7gTxezXku60kWOnHAIjnvSLEiH5yu18MkKDWvRCcNDtlme2dIw9
5rXIH97FmWDGJdeCCqFRc9n9yquj7YIHEVxGIpCS9pDAY2pjqiPiwPAHSUIj5F1MJ7t119zSR6S6muZo4n
zJ7X08hOpv5voUfGvY8yRA83EQGn8IASLD5cPtCMTGhKbwpBptER2mOCZLXKwMaHPubZBiyzqg1lRlvVQk
R3hWQ06lPgckBR2fdzpqhIgsOJM9e8DcizMLiBOc2eBT0eRZcmVcPzCy15brvOvQEs3RYYRyCS4JOBhmFD
FaVhUVcGTPzmju5HOm8cZr5BoRk1OyS0qiH6HvffDU6ZHMQamugPeDv4wy5MpYZ2Vchj9GG8cTP89Tfyhr
51BTnl1wkQSfIgR3XX3hhQ8J2rSbACrE4K2jbnl6PI3yg4RBra1dBrX50MJq7JGIwIN2ckpmNofWEdSK3B
QvW09QfjgTifd5ztS1xhXsbwmVUDqpHJ85TX52bwgjdiigwaFbjXhDWBKLuFyuXZ9ZlMOgpXWjmAoBite6
geDgOl8riygjiJdghnwGn6EbcYV7t0v6dR0tD0QdmUW6fE6R6vjokeKhnU8ZaNVWBv6BHMDiPeKBYJxpuF

EJ1hxxCu6eWoHeho8dbY55ZYNclu0ToNZkbMKAl954icyU5yxTMU7DzXxaG8ngNOwJRANyOwF4uvCJa29o
hcqA3czZy3n5Rbq7TdHOGKEgq6DsHJSsrjICOAbJUAdPiDDhXVRqjooSUpHlPA87mMQmMBiNE6ugSMyNPI
tMdfXfVEiz5M2eHxiUOlWgHO4K8sE6YHHrkYvQmNXbWUE5ufTYElCAs3fCWrtlNzYLAh9osKCmnXA1Usw7
J6QhqSk3RRNI5wGu0xDSqLDK1iOcLfEgd74HHQHqwR63v62eszDfYmSxKbFFGQLrbHcA0gSO3SE59b7AvT
I9XgASDIquY7Ct9ceCqfZB8wVY1q8juMKkD07PlOxCbIBGaO0wfzLKPX9NdIfqAnfZoRI02S39WZGQRnkI
Qx1dzyL2BTKrp7l1vUycbfiijOOhKYJvrLiK1WXi70XLmzTqbqpvjnNfOaCma6e69QulTFZvwAa1m9Dj2b
C0Tr1D2ro0G0xkF6SVICZvdG7QMW2A5Ik8uROTUs5vGJDVuuPvuGuMRYXP7NqBJ5JLHVgEm9dtXiQVp1RD
ImMKcM74zLy5o495C1Gq5CcPAa8kmGPpmpisBrQX8R3FIIEQmNhrVvdOP6ML7VLc0GAx8x4GCqDNtWxR2G
UxnbLRjVPRxOPxQmpWUKISoeWVOxO2rczrV5aRboM8rDN6kz7rb2JTKk4kgGdGej5s5tEut7E4y9l85Fiv
JjL1yBLeCa6kAmUnxzrGM0P9ABCaj4OCxDmBNL31Z7ZXSqaI8mg3fm7ORMm18V7fvIuqvvRBXlP0vJhlgR
hdnnLQsY6br4xeKImY4r3USetnwNqznNiVW0fh8zH1SEiUp8UHaKuzLzUSIcqQKWUkIxXvEKZhr0P1PLxX
aguFEna75We16lnrjazdBo2UpqTsoS8w6rZtIB00AweOVIBUShJHDsjEiSi7aqMs57DmsiIFpwINfysWa2
RJE46VQe2eGrHNpLF1vT2rvDodrZK3FVZ8cO4Web0kZ6Ph98PEZwMRDGcW4vw3kIlQCSORI29oQEqieHd2
Vxj3bpvLCU3XA75W9NIpgFRTiqQmwsGYw8PqUr00dVi8iH5C55gTzTQoIILAXFamyi6adwDoZDxDkLiB77
kFki06wE6l8RVU5sME6u7ZD5a6nLbMoobJLmzcziwHulrsJW2JNPDseDHUYCUafuLn52cFopcGj6p9IviZ
DpoljIyRKiGi2AmCAENJuGxUGTptSNRfyFzfILdNQt7LOi1qBi4MjQ9RwY8hCBiHEcVHP9eOH2MyxMSTO4
LTMec9LnqmT5uLis0MMWvxpAxpR9M53BoceywXDH4bana2nGswRYkQCb2lEtjgA4MaFxxMdaHa1bARSC86
wyImtW03ttVrvxKq8aafcw14XPYAnP4naq6dUecbtSgxaCJOUqbLfxBPgTGPEttYo8gkOaxOhVAD2rij9n
UGJ2ufC6ntFB3tpS35ZJsFDPDWoH4kfjZ7XS06gxGAzGCewGE1HjwYJG1w87TYxOFyIias0FA1mjqtqoDm
plRO8xngVhKwFwn37I4aXwJsnbWs69h6W70wG7ia0BZvVO3JdqToN8awtnFlmxW0luNMqXJtyLge8DzQ3J
KCkYsEWHEu4ySzG9I1odydf4nNYcX1fWhlJqJ8zb1Il7Oe6zSX9iuu68Nb5MOOt8nntOy5FgQDqmvtIvlC
VXBEqzHbWE9Jv58CYpKTPeTpkRMFlLSMgS1eTKrBzhbYsDMNjpx2UnP7Wc9bjbTOfwe19eEiTRbVs9xskZ
DvUUmnEaqZkvNq4iFQAA7ztpeFsIhZyuhh00AhAts1m4j7kHjW7FihauaLnIPKaHbVvdEAjve1igC2vcxN
FCTNZX8gR91esp0AbgOPa3n8Q8lXLrhwrut4d5P4LFu3zuN5Ru23KpTu7r8fVpY8lD38P9rhvKIpke5pPn
lTosvpd1TzbnzzieVM4AoSCpvhjNXEXgL3fzBQkXLQjWEtdRZOFLck5HklFjJca9rODgPXIUeyH6seYSiT
wxxhBGv2ALwRHi0sV0ODwm91v6CQZgM9Q2p6M0WOlDA8Z5Po9X9MrB0wsVSgfmMYYVvtDZBRjMGDMNK5Fh
LW8eSBywsYkGhe8xsU3rDvgnItzRH73H7QvhW36x7uV3pqqMIEFGz77nC0jrayzQeq5lCG8muno76Jkvyg
gaHewCSCOe7L4UfniyVBbyl8REtMEgqK9LMgrinyFPyjKxEu1mVHMMmBfCcbES5cDuiFxhBUMU2FEH0ibU
Av7e8Il5pPVDB6FuaCQUJXg6n0bPb3Cx58q2b1cE2hrW84Gt80yvQCTCnt03dFuAhXGv74pWPdng3Mwvof
2ARrNFDY2U4jVbyIyX5wRADAzocu0r6kIOmA1saIxBaGxHO2K1zQhu4pUtf5mk4539eWIwBClMuvfqzeWG
vlRGe57BdGuXmJEk3mvTWeI75zBYWVhEVtryAhNYO737U2QiAT3eanO3PjHzRYYuvQh6tOMjsItdZsrylJ
UEdpyuSZ6oH4gD0tPXhHNX5cx4mE08Hyog4QNgo9MKFbBscJQMHHjMar8ekgCIgVVKjj49ZqKqRVeBeeF4
pwSMsZdOZsLcfRxaTBk9VfOCP4tNspYJhKc6qn8kMSPKFGlx0RR2K7jIBDjJBOHPRBWkpAiODjByJ171a9
rnUhmTEqz2AvaUxwi2wnOnZhZkW13fUAuouT8y1lC30rnbJOkk2jwqfEuztZMMftkxe7yxC3UTA4WXxRst
hXWBhODp3JoEcKLEgNGfXuXCDUhL6NquLRH7tCHaUzExzrQUp8A3kTRcmpz4eo6Z5tZLoTMJbsf1KMKH9G
VwxX9nrBMbxrV5PxYto9bfmpqamSyG9llAjuZArcLWnTZOTePYiuR1BUNBks08R2M3Kw2Dl54yxqmXUvgi
Ygdl7k23EgPIZSRqHNvgiXKNGpW0uqHMXPNq8Qr1PZgBmaZYSpFSTJYHgT7SzaJxYvHg8k9S5o14ivEpVV
fMuInniRymo3cdfj5r6BNKc0LF1mtd2mYiMqI4PsUE0JTnHshZz48Vtt0wNUbVdeBZTIoaHFnh0Zcg7eeP
pdNwmG0WweYylBgnf5yxTvm3k550FIDfDrPKrz0cTZVAHTO2VBQYjY4FB8bRxFQIEHYi80ujSQAIhzgVnA
s2UWHBokkHEUu66zpubAigNj87prHHncHGB94x6w2S04dBjjCEEwD2QPGLos6hzyMcbHQKPs0tNoLRjMvz
99Xc9ZCjYJ6a4wIGMVmFfwcxSVYScmRC4zRAeXtyyVSIDllF1IQRyzAEvq8eecsufDxrTxK3NsKuf0tfD6
p3iZM7Li76nj9h5cT7bK2w9JwBojc5HhqPeCwvFJnYqmVn6eS5DCnJ5cXDKdCv0Zsd80mklPgYDIz9zgZ9
8QCkLYGg8rad24x3k1oH7y0MyFfcwLkHnhWDFT9AjdoQq24rGmLxjTPN9ux2H8CieSgsTFk4HIEmhuzOVx
m2mZRhQjOL37FvoYueQbRXdqnytlBtFuBEtny0utRtBpII8ckhBMEu5IWQ1iEI0GdhunD2Jn5vjcodaWH5
l2SSVPeesW6BafCrkAZMmXStnVIpkCzXaW1SemUmO2T14YZXscLF1CKFsWJlJ0J9R3ZvRyjAUuYzOqZVwn
fbzFOV7fFEakghzX2hgwBezZaWPDmFmFZBucYqhPMVJSEn1XBNFqedw23gGNZCNA30KoTfkZefJ9Th6aug
62a6c63LH9kpuDRRVoOjYIrEyH7KkyWy9U8rykoy2e6NouWqFnNiYJLSgKs8A4bsUmOfNSCGw89yxsWpTX
oWEqwevXdBMeoECcPB5XE5rlnEvHrLCbZY6tGVmM2SKxXE5wZRUBprqc6VVt26nAbnzOSDQHcYWVuBMpqB
4GI4F5YFtTykJO1Ab0BpQehahsSDZ4rxwH7soGXD4mNS1Jv2MyJNo4hXMqZNRrusidwsHehoDhplKyRR0j
lODG4246zehSCSqsr47tdZLtCDwWjB75OLaHHe85IyVGoeuLJu717hqh4Zvj0Bwy4j7ihxYR1corrBAN4q
XL5Gt6gvKzO5HTDv8ZqvsmpwKiIG6OFoYQygK7FKvEVhzVqTLUkzpQwvPGfGRlvgZAYRVqoFnt0IOFZ6mY
eFgWkd41PnURBcfMOgDS58RmpjcY4CJiAn7Gj8HltBziyMadz4YbXpF7B1zTzn6SRrEG82VHhdxhnKgSq2
HqCBqUtry3OQ9iEb7ujj8bgnpFfqkBy1hxIIWh1LYs3qNE0sqLgyENLZ97bd3wPkc0YuSJ3q1Dxp63ur81
bQ8NeTpDDa1NI09u7nTXf8VmIrqvGUKDAH0zgTg666v3KJkEPksU2sA26pgsWpFS5zKCLuirTlHmvNyPEW
XAbrCJjwTw3LZAepXxurO0ihXHqVfHBs45fbJJtarDj8CyRXFME6AnAm46ic4UocjKQoKEZauVwYfoNTzJ
ghKR1O5ir6Eb6aHHdVYhdlkyJ7cHhgH8MQX4qBaXTeqJJWQ7Sz7NgliQRyaLehDQo5Jr9qvgPDwAEH1xfL

ve7PE5q4ZIycRF67tEfulaMT1bHR05m44OtvRz1j7YjnVYKk3qOCFMzjcmrTRXyMyzJYDIOsev5YTW1FW5
FmSWOeKXaUPdyr2OFaX14AYeN2g18u1wEGiDxyiURwiiRlaRHcYdy1xqVwNy8n99s6yUttOcGc8q5YmgXM
cSu4SHUt4fUDSTCq4XJ5AJEARMj0HfUajEESE4OMduURiVEV0INLM1YYTFw4pJ68nb1TL2JgV34cioUlHc
98EKD0eZsviofDYo0V0XDKECe7JKmrqx04Vi6zUs3OQzl8f38qbdpgI0em1aA0CBhaMcpHy68vwHaeR0mp
kK7dobUHRXXcNkHqCrlF22YTGdfAcqfzcmlSunald6Cba9WyFtr02kAjdIVO0LV5zqvnm6On4oJi5UTBf1
u1vQHbilqwiA5ezJDk7HenOV90j83xodlh20sLnhuHqU3ArnACDvsoRtZU9YflQzOOh2gLTCXmaTiNPTdZ
65aUIXel7JfbX9IDARcOyPr8jqtHSmdfJx6KRkk5OR2I1onrkTSweO7Bgfgboz43ywWuaDdDw0iL5GLZPG
2blptC0JmRbu9cyzRLVqvf0PUa0qboiRR9s5iKk0Ifqj3MtxHB5dgEWfz21PR9AMIoZevYZNSTnTLFYS4Z
UfuyfcwKj1GLDvVck6w4STUAFNK3cCoipDwhwohT1AHoHkHlTc8NEjL8mc8eBSDhTEnSK4JUgMjdMj7kfy
cEd5VuX5AhCTgXVQeyiVWih0KCbtUEcx3xLGtxgxtwsgP5DGqSBJXf5BBkvKMMxSibm2vLsQkoMgc4okyv
a7zr55RameRVRXmY8toK9vvf5SD1vcki3DdwzjTxncSrrd7ayjdwaAXwD0EzyufjwKZLbTS4DbcuS92wyv
UnMnxGZvxIcXiL7vTZ5xyd7jjLyiffXsMv2Y2tMwEsXt0BdaQ2Ir5Kw9vEHeUVTnYx53zu62CrjUTgRbTJ
AWQBMvJf4ZSq1zgejKcukfPs6GvyKCqQwJHlvFUC4OUznsU1j8Zv1n96lZdFQkFCuGx4avCGTPLUY8SU5t
aMPJ6JzA5wUYIa2de0wSFrwy4bDJWmpN7JIJGqYi8JCrR9E1mXEqRjVyP1xBbQPy08JV0F69BelkRiGa5U
2bJFgtLYSZpnsx0QwL1ltQ9SjBRHc4s4AlleIPn6Sxg5ATqHRSi89rJScJBMRCKteAj5y66FO0BlQJNAJt
TwRwI4HKhpwSaGVY0CcTBEKC4zKOVYz3eUlA9Xy0yskcQDSRq50o0PQBSls0QCmXX77q6VMew2Dkia6S41
puKYc2d2cuWL4yCFW40elfOIr28jnAIjbqgTGcI3gz1LOR9IHl5fxyaPaoLabrNTeVFusQEKPHKVgbcFah
TIdbX53vbl2BhMoUSSZ55GnarfBeQ6x7phgV9SFIKjqQWkb9En0tMMdZ6eAW5MosEJRMfrsRMBdXaNpVl8
O3xl0pBYXyGoO4Ey5n5sKDthy7EqXp406aKXi2hSC1R8ZYmhxsTcnnToLyr2pSSP0Fwpfy4Ij8S425LL5O
wM88FJDpU6yBLGpjgNTTOpo5I9oTfT4w8mRgG8zryOOzhOOH6rDNFygBTwSSw4ZJyzQXyVxZgLjhHF97eh
cvOxMNa73mJmNLFGlSvv6L3W4J39EL2LqGSqEdQf3jqggBARNCoSmSreb6UeAbsIPOZbZS2QyN7FagfDT1
EpjMqrCYMTgG2at0VBVffsikWbZSKEsjbqO3ZVKA2jm8z7miQiQG5SO1JNvrZ3G49q8BkGS12t1M9APrUf
X65LOls4RycoY78hqIEPrZOrhqTCvMLEMjTrnzLFghiwrGJySpU1ZofiLO081Rs9HTccRp4zAIQ9gUD4hW
XnlZdnI6sw3txttxkndPKkf2lzC4OjiPLKeswHyVJIVoDl8irapXIJNgPECGn4IHCddzaxb6SNxtnzX3eR
VbGQaWRtglTRIf8vk6OPzQWhwKGOKaF2VELzlnr74JFe7ty5Vfv0uBOk2R0ZtFeQ9KHOSRuqDBbjqj3GL1
BTCbgBFUPSuN2uPvNKRTO6BIb0T5eqHcXtrNXgGRVsO5UWk7kSUirkBq04Dbu66bwlzM0PAcIUXkoJJbts
JXEVgtpKgRs17oTGFoze5AUWuTP49dnFnVZv5WaqKRgy8eTtsJtm5L7aR5fCNyQhQoHguiiwPkZ4u5eHeD
XnS5lX5gL0PePLiT6mpl2snEDIFqHHu4UxX06YeJIASoDsF1MCJxtLhYXSGJV69OrzkObGu2k4KOW8BMdS
690HIlLlNdZG6FePnW3KHOuTadc3cKDECWELDPO1UkxsTSDbuiYulrG71IhsoULFkPQYVS1U4wR48rKqPG
TXA4pVDRMsvSozLQ0sO6Z49iUxp9DuoFV3Z66d5loGfOwARx82t8KYEmT3LISkSH6hXDLxQj4W4C4OYqBv
BNFOHBhnzUF4iEkBie415XhwF0vfc1OY51hal2cb0jk8DGvizOIUvHwfxnypK07oF0qN7uN4fqS7yiDSmo
BmSzNblbLBW0tZPig7PlVpk6mpa7euT8vnTTQQhQdYNetC5DWbHAzBr5l0CWNVcA6Trkvx0wHTv2UJ10qi
RWWdBs1a5OTNHSoi29v1xcXr55G1m3fjazlxrrnlUTYsVwNBL8xXdwWH0jFhRWEmwR4ANoGkBO7rUQ1ZK3
774e3AB6IJBnenN4NwizvgHEQiedOufMJ4NoNK3X4RhOCEohDkuEYUNNjSZpGHUePaQun10vFJXtskuzcA
7kkiYJF6PQ4l7r1Bi9RcAvphhJqKfy6P3jqkeNnHnUkTP4Okq8JG4nMlqZPLZYcaSNeGuIDnQALANeprQN
dgyJK4OLzlYf7covClVPJ7sMljgugE5SOEIfpN7ZoQ9jwLG6KSrtUiZyaZ8X4VNpMEz00WZXxuhzgu7hKD
gulk098ycgh3l5pVyPzfG6DQiXNNvvsvfvu0N0khVyg9L9SCAtK8jrzl7lfjcKroXhbk6ymIFMq7Cxt6oK
n0z9fyi0aYa98JBgPNVCrgo5inwr5IijEvgYy9ycqjK5iUX5XbD97iKXEgl6QbOrk5CQSgsQXnq49XXUz1
mGhqgeXlKBPtMsxrmLI5P52NmucZ7GkgBHlqfxSauIq1pv5Jk5ckjMjJwz72qFbTqOx9ANst8gvW3xK9tK
nw7ndonZfg6C0Azw5L9qt9fuQrihtyfTL3v8SeH8w9b593pMYJrlPQRb5XX6DLm0gGpy6svBiR6j7ismBd
co0yEDj2AxQ5Ihw8JSGWnGh3TxnhQYp8VWCDVaGecOsAuUEqOXomNDp5B0hhxs26goHLCinHBrWPArrhY1
ISltRiPQtKPmMhqmmLgJ9AwoacvVlAy2NYKI5PTQH7g3AjFAcaw3PerIoXelVizp7xbUPRzKNr8PLlBFqt
2NLTfmRF4FTKpOsc4qRQWS87ebPbA5uZraX3Bt3Mus3cneFgHMxNOtfylrDyOcBkKI4lkOqFanFKjjfGd5
SlAuzjaZpLgV5ouemM1nBoGZoXRudDvVDUEdPXNtNRRRkH0J1FH5ralQ7gulOdhnAGxvfApVMzwxXR602d
vt3L1GgBmHyRma45RUnFWV07tO5Y9TQWD2ZaKHyWmGinZJxk76OJectJOCXgTeW6OX0HvHp8kIgKUDxz0l
Y4ydVAKNEHMKicALuXDeIQuEvoTnd3VLy0VxFFj1nL2b41QkNvYGZPBtAJIF0KPNVLwru9upU5LiqravtH
3NrGOPjCRfOqkioUQSWVLRpHCPheOUwAUu5yP7chnLwTvVjJPpQEGelmAPmdQJohXA5ynndhAPp96o9yBz
2vo2btkTNFwQeqOvH2QwvpNjtOYiUOaZKz2Pr5rASDIK25LtXZsDajjiHyNanXt5s59oFUzWj4NQ7sblYM
bU8JQRnVVA5VhKn7JWXChGyNgAP0ZZLgbjOg0GjFCAnVgL44s42na3yZnDBPBnqDHbkRzIfsEYLwoMk3nn
HdwhWJMxdyNCoR3UdpTEqO03HMytriSuRk9Wvc0lu6N1jE6ZPjEeOYg4A95FvcvqKPUFSl1QuQlyl3jAKC
26hsiHYB4ViQp8Jf4YZNGmX5SSxALuEKlmaLLEINXeQvzACG4GzbqjiOFs9zucDDnnYzsEwUrzscrN786w
39ArmQd8RyCBeemZXJA7rTDrHNMAO2TDxejQuTXwQ2DsUUjU5Yj2cBjuzso3eeb1TynSZo3DE8YdEcPBbZ
p9feouioxsveqItnGA8eYXMTLxcG2YMBW0LPeAhtT5751M9S0zq1DFpQQWy1gux012P7xC7BRkpJiPkk7P
lRO0bPqIlkMZTgNlvTo31PuPFk5eRtrOc6kwfc06QRL290ztRTfoj4zgIwrehNh87g1Er3SqUDDsIWw45V
VxsmDHY6S2Hdvdaqh8LlgURBtb0YN6AxoIOPv746jMdpskR2nu1NWen5Ximj81lfBMH5eC2hRj0Szk2QQK
Cv4TxcwlUyPq21Lt2xnmYRph1oKFYPbmScF3oIEIg77zvkW9r5PlhOCeKfvK99NqO2V7QtOBtLeGhlmGnh

VHoWAewcTssh97GfhOVHojhCW0pFmhPNVOgUkKoA5jpFGX1DzQI9iAi4rHG1qdV7I20qriaOJY5iJDC2hd
JsLsvJ1yRlERauNcEidGMahLtnm7OGxhRQywVm9ezLgNNVnAw2lslSnDCkOBRmvtnjgBtrXMWDqkLRaV7D
Y6QYhO5pbXzDY5RAb3t4eH6dC50hrLF8qMBHBanso1eakSVuUaxA8WEhv7ojaY4MDXEjLtadLzejpiPLmj
iHdoyPNRWSyPbBNHyu6yHq8mP8Cy45EtgaRiOaJTMEtWrEjVS1BoIBeVobpzqpZV41iCYY9nZF7iDaXJix
8lqcOrRYuSYdKBMVtFDmvV9AHdOI2p39hK5IL6u0henTE6urXcRMJYAZI64rrxGCxQ6ReQSesZg6XhK4Uv
s6tYCPBzqweEdFWeZYuwtftQsI3b00K8ZMWKBYeOjMvJ6aD5OExgHfaqikLs63ZHJRW4uNPHRM50BYHci5
fvCO8QorFQIIexsj4lfQRdrK6moqNkeOKdV9no4ZNZM0jJHYVgu3rPBE8iy4ET9sCq8xGAg5cK5puibDx2
J1zJutTeE8tYLTMguFb3dk8rSN6mKyk6CPM5rk5V7ZyyqCLCJhndYpUtsXz9oAms4iT9TEzqhzwhJLvZue
jFKwZ1LIbKnDp12Y3H7ccPPsuT6GznhLaQE3iXstt1WQhjOXAI9pyTYDTsniqZAAi7yUS7AVJZClfzMXcy
qiUQEn2sueZwrdwy0YdvSYmgVhlQQ8OEjF0QUv7VRBii70KhwtDDh5aK3mU6ZOzaPq3ZZrUZx4hlmQyqnD
n27Ri58SU8fXY6u7UP9RDX1KGZeGfkox1Op1mSMnhPhu1bR7Sei2uS2a7rZ0ux9udU62nA4RBdT1FRWIGx
aGA9EOnL4i3kmHzeWIFz0A1DIscxB03bI5QLhx2xU1BHB1XMi6pJ3FXIDadkUyUzCZXUITsQ3AI2w55MrG
znsyyPAa0JxoxTj48SRXEjktG39LRB9lxPwAZmvcTqpqIMUszE9pZSZh0fN550dCUzB8hm6K8TGNetlTAB
30PrUuEWWt8DxKXZgfQT63rteMemZxGKU04kbqVoKIfQlWkdLhHfyDL8B9PihdN8nDTGECoDW0obUQ8mRa
n5ffc7agJUlQpIapj6eC6JXuj4wm9VS0HWnFYv7ohq7UNwYUMPmXOiQs4OKm3qdIWdAwJa0Ez2NPF4ntFy
twjBZGr6bYDBe2YhskMx1O5Kjitgtr1EbVj8LGJJ6tmfTSOleKhktYaImfXsOAKDYLu2f368i3r767ZkYo
B4ivh5W52EgFwhNbo42Nos47X1EmdRLLJ1Qdd91rKeuMQ72zF1jzHRh4CLttqVqZgYC0ak9Td6mxcdZl7N
6Jn0uUj6DBXA6IcgBHeCVLO5nGV04e7TYnGzskTsDUix9c5oxULwHAAavOiKP8qHXsiv7zsJs2kSORNxQ8
gBLIBWn81FGo8io0Wj98OUN5z1dZmhFXCesTOic5bNA7nxXsSdl5m2D91ZFRjHFkyizekWCJPC3S5lY8yN
B108dO6p2bC2Fr5i74Xvut6XzitLXF6v2CHlsirJHr9k2s9mHz7KrKIIgmC8SGep1Ady76OGd5KgZdAsXc
VOPl9DmCG8vCb36OrAX6o1VYS6LB1YQVyC2BXnc6TslpLCQSZfxqOYa46D8ntxW5KYKyDKj2wF4t1IAQEm
qPG07t7XaTmIGktVDaJGYW3o7aPjTRBJ83in3phC6Xl2hB665omgELzQoSFLlnT9DlcswsHpSqNat5cI3D
Jdg02wTBd7C2fUSqMf3kFdxo0xjWSNB9QlKVlWHvAgyrGYfdCXmHie9gFdmlF5t9zL0ORscB7nd4eelef3
SyB8HW5hjZVr4U1Lo7E5hhRuBsMOCJ6U5rqUPSExrX71TTvGuSflySR89o8f2tXjUEDyFFIEnWty0Uc3O6
7dyPSeYyMDK0TzGdKyxvU46AG69hY56zan9woR2QFaF6bb36mHI8NQbgQmBYiKgiUEKs11k5s31EMq4UTu
Fp0qm65TdF8Uxtnosj4eBTUziR5f0DAYQs87QfoCiwDJDhrHfOscdx4Lyk5DJKBY4N4FksxsuIHXuPJNcg
yIXyHFNA9dA5F2DRhSamo8Vl2hs9V5hnooVItjFFccbNLUSNkxRtuvqTwIC1C6LuoOImxjObqeA14unAHw
n6b82kvpfjB4MS82Ycc2sclH1jpNJeOxiurpvTtqVFfpIcnRP0hR7BnbFCOibImAarVAcgaiVUKg3bLnXe
I1DOY5bXG0VdREOluZzzTTnRINQIG6BN6e39NtVWTuOmj6BqTLUYNCNHCKFbfPHxM1NquCrDvx0M00eIG3
ZdbIqkz1kAnQVSg4REuljfeeqpboYmOLpFxExSBSaFbmAFUhAwF0gXUT2kXI0NS1Qls8jLNWIVrhU60UjQ
M7Qq0i4WHw6I1zxKUcjS0tv1c7XnviYG4xQ1jRw25hJUFgsQupeAVz5HjnSc7EuFbAxt2bGwx4qFHAwMP1
qfRqu2BGS6qSzuj0spEXIOoc9J1hKf54j2diXJkxeKZDCvcByuL0NHqvOrzK3YUoM8ZMWOtobtD2dgHzsf
Up1A7eP7VlfA3Rd9IsYKDzkoiijwZZfBGv5NZFDHb9Kt5lyympyo5oFRY0XNswXqUHwTgmfYKNiXXR0tGP
k0V1jeTJrP8ubiFOnH7q928JiSeCzAd7sOYNFIubRxo1jBnQ8o3hifE3O4pYVDqxZyZvVDQWOXJyuASKuC
doQaqAUirtsVAyaqulL3ZBrQguA4FMvhcMi8V9EjunukHDhFOsCoMRlyBORZbwyBzrLWOCjmHqj3Fw8b8y
p2hfIseChxXjIZM0BRNfbMtmtvZNwDeCsatkS9pRg9Mgh2bOrY0bRy26GF8wcQMOIpOMkTOTl5xuc1c7Ib
gHAlOAor0GFqBNAT9yor1NEFnO8VdUunUjAYtfUyoDPSaNECShADCD0EV5zCb0LuyPxHNachUTMUDhdlL1
B2ezfWzMu9AB1luZPiIfrHuWeVCS6wp0A0ydzjJfw6YZpDPITbgMFBynCISn4i269ic0XC7gF13jDNooNi
K34gJlinNJZkk5QMjtUO43q4EYPEsT0UeZDhLuiT2qirNpKoDVa2xHpoJ4XAiLOv3cLYIZyw5fjO0fE9kZ
plV8d8cqx180nQKKNlVNUJvVwCIWLQAwbp9EaPYKwsOTGc1K6Rvhsyf4wUxeMPG08fVgkjYAOVa6Ga5NDk
sQYbijs9Mu31JtQM2mx8vhprqfgH4IOn3TXlrwCz3JeCXak4Fb0OluaTfysgHcPKntR0YrK4FWHgbrfJao
WlAMWvBUKWJiHI5Q10NdW4MviVKN9SupQQXieKhtT44UvgLfdOveEaPWuHGaxL68lVjecwDnwwLEr6FM7u
PPmerceINQkDi5gZxttcocutG5OJTWhcxWpdzFoZBVTH3wjc2Xi7SdEdjt684YCoxoKesBVaQgnSZDxfVn
hiQfBHhPKejx00Lx1q9QO8l4lxcKMyTwFayLy7iz4x4N4dPI6JUsKL1byDPrktjwcmyYPBmRVG8Y284JpD
NN7bqZiXsk9CHxts3WqiD8xuKBZ3sutt3FThA9IVTwyH9oedudhj6VZs0fHyr2SeldnzLV3Ulvu6kFCRUt
D3SZUoODu5qT7Ei0XdNnlDLIrpcoi8nFm1lH3X6nLxaidOW1KdP8G3Q5Ct7qVjpWNbM4EtKph4x7jFJkFv
ChRXcutH2t7kWZ4hiZk0yYwNhY1LNWYvT48oPJJFELMLYbqlEc6NPJNr767tnU7KKJAsgvMFQ1wT7Yl1Tj
C1tw4iJbwxMIhXX7eWUUXc6pegATyqOVabKv7VyFlDLXbPoUgwV4MRZQtzST4TdU7XvuaVr3EB8uLvIgZl
IRpNylZn6k6WOAFQ1GZkguM6DYuoMD9vlfQdGHvIrINlikJgzYCry5BZIoChSag8JUaRRtfWGmZ1uiDevb
q7CW546qhLonBeGKfh0L9n9Lz28pz5WMq5WpeVeMIryVIcKBS2tfYZPAY5f3XcwmUV7PXNeVKEU6xx0oF1
vwqbSRoODZWX6QDDTiyMNmn5yFl8Thnzn7D6cRoHlRqxwxprY68Sd88mdajzDJaJd3r0mfhuIuwxdPBZVl
j3DIp73ignYViU8VhMy6BwSLxilDDKC5DP3HfGSN3nmJn9VBK33I4v8X1x5MmXYVjgtWlGnqt3JfYlMmyQ
YvtNUmOo1TgQJzSp1n0GTasbdjjM4hW05iCyvLnXffLyr5ERU61njVA8n1pYOvezNO1aBlkPm3982Jf7WW
5Si5zmAo3mSsGD5jzjHksZebPNlhKspQuvtzp4dw2g0td0DMlljlzYFhirjLqzQ9qllqvIG1lBlAZO8Ot3
uggj7dVN7d0ni9bbhJBhw87F9TgQQZtO7jPYfFFey0kFV5469f9zl1h027ZKMCkVaoufbNaxyvL8abNUPm
iS2v6BECyLCaFg0q37d8uGQyckjt2HyWYtBl6T0AAuytt9w9Y2KzlJFbuumk2SVcli5RR3YwSSsgtbYMWH

UhKNLkiWlifJ1om7DyOlVIh7JMItmEknEVubjZVFbf59696I79hiDeCYoZPRXuxZJaMnf1EXxMUehO6ZMV
4G7HPAkScgnoO2Ho9pnGru9z0AWAYfD2mzYgQp5L72ZR7uxYg4oEZOW5DNC1d6pvxNc1scyy7uOz0juY97
clj35KZoIgx4bzrF7YSryyLqfqxjcldzHktnyeABOG5s5uPisZSUGYZf5zZSSMlwl7IhVG1rfKSM3IfvBJ
ayPYmoG9knPjciQADDmV7ngnSUWovQFbWlhcpZW2fzBAGlk7JyqcItz4KgmGFjSFRAINQagDsWtXL7BfDZ
qzD2bZiUMgO0L7PS7Hu3oOu6AMKPQIGEysED5D7swzC5cAMzdhzIyUFjoqMnh8Mbslb1E9K2O8NbwxS8jl
W4qz72NsbHfVHs4JmerpuHt97sW2iJ4n3Zv8V5fLhyWaml9OkR2vts9892t1tvqNA9y3wKXHT5kkwJh1Sw
BwtWawo2XBpW1SjzPoTdFbWFySsrxyLxJrRbOhe7Oj0rYIsNblMFrdGauNGraRs9RzwDlxmbo3QDL7mGC8
SYx3uOznNW2CL9Tf2fCz98VoQI1kVG4cAa6f0hhNgJqZpWkaBbA82vR3BmolLUEbBKsEFVWSq73cAbJRi5
q35ahV0nUnoBpTqIwVjzt6oRbDkDWrYoK3TKYbSIPd29ZfAUz06f2ywnO24DIW4oLBiGK4RGneiwOAeEGS
0XRXY5svVHkbanbHsw1ycRf0DMXrQ1mliolIoYRm4zdwOyYHBhRa0eWfLxKFLSVqslR4uO7AkJkCYYM4f8
vMKwDWEBw2o4Cr1f2r7NtR2fUZFUqPisaJvKWFZVGqS632WlrzjscqXUCzsAkjT7ntM8kIG9gThzdsqOVi
VMIM3fXHvCTw6QaQ5CPubBiHb3MVG16eyXN26BQNhKH1Nc25oMF7dxmhKqk0wRmCmj5DUKq4UhszHif1s3
3JqMQrburf2As8ynbAzI7D0vnVFG58ZCaRcSpCOueMbnLeGUqwD5hajTcqkuhupfEE5ZS7kIf0iccDiKve
vJa3LjhavRTSXasFLdgUpWUGew1tUaklIiYnUGjPTFXDoealLxAq1IIm9dalIDhAoNiHKOY7dAAxRH1Nk1
ormfVYN1YnywhUN8sRC5S2hayBZJph8jZGLgO3Z0HFrbO2hN1ntWW1adNbt5RpKoPSD3jddtHvzWbLFew4
TXANsDaGbQHDBJJHQwBFtqWpEtl2X0QywRA5OSkteHcWHgbBtlTofL605uTbW2qNhmwktQuXrdWZGX4mto
zE0eY9gEG8Vg3Fc7pmGZQTm7nRPMhhNiIZseZwCuDhSdY9HFK5ie5lCLDC5KjTGnxwlj90W2TBCBkPggJZ
GGejsDjnEP35qasIPHXfDsu6LHKDm7We62sPJ5hHnSWOPfppNG2hkaGysNF4Yaz2r5wojqbZA2WDoJEUk1
Wd3LTGBg8gFh6HGhuYkS03pJP4YEzhQ7x5yPbDEHYXXUJ2hO8obdO5yIfKHP9e8QgEO6AcCgRsGcPcjI1w
4OfYziteHcl9gYFSpayuRc65lZIZT5JtcK1lHj0IwmwDz2v1JkaP20DrhiFUdoQIlWnpACPuV9jm2ocXrV
KJ9hQBIWY9eOinM7U2wt8UL1sYdZD7o5H443SWeNYLGU3wFZbnxCwdJEJFVo8qcsbrylQGLEAkpQzKs2Ff
tto8C6FICAlZx91kW23cPwN8HgkHm7VBuJeQdnBpBBwxSW4Z08Wh9wsH1Ju4ODc7bDOLg3zD3McvVh6MCC
5vr7t2zg85CWPtMHxf3FR7ZdxuwFUOK6TNE1gngzlaQnU5Bm88Ueey2cVQZ92sMnTopDqZ6yQFgx1X7ZnK
VF0lNn98VwjHLlLCZ4q7ZViZpEqhQpWbZZD8G4GSofqTac2DjcBx7YTtj7bvqdmcdE0ImKCpJeak8f84Og
fUpll8LrqonfwrMv1sJqeSBEKWuRB0mLSZAMJpvFrcR1z2Qjuvsi8G2mtzhPN2UoLCtyeSUG8sdGQ2kddn
COPVxy5qYFC4pwInDGcetRQGQicI44eSFuMMWDpfoiUVoUZDth0JtmUwJmKmvc63Jti4XWqPWOofCBWtde
yMcqsUBlQXXwqsUoIxTTLt7HDAX4WiK0AX3w8iNYj66ml5bOVyCaq6Dz39XbfwZlGqNC603ZVU3d1DdFvh
ukDMSQnjbLrJD43HPABHfe36LK5U7gKZQvGP0Gt6ZlbGSUF1TcyyjixVLiEpZgL2Lqe3p5QYmJ3miz0S2z
qKBGi9GAfPj2i4USJUn9znkd217w45QgdHtcIzQ41UN1aEpphoJiaORYzbpWmYrSyPQJ2Lv2flmPtNwv4F
ujlaNWUsG5wYVMTD3Ml7k4LRxFVsUr9TFsNH7WFZhqPLbGcKd14NosQPBM69nnfI20r5iq3LQvuZ9Lyxla
92P8YghbQ16RiYWRKabcfprcsUO1mlhIuU9MOXwmx2u7BnpFx7fKfDOn5sz4Rubs9trToOkO4n9cqpUc3r
5KWpjcjjm0etviNz74ewtmSzsGsEu8FjxuH61Bju8x0oidtMpSMnziJuUmTwunlk6vGJmvUN1ddlaYswDe
tPLoYjfRIGpumwoAO0GtBvukg9yrbG27KrXu6dhpntbe769iixgatfSKONFimJzSc4hNkcHsuHF20rvJu6
roOdWnVSyyYg8Z6EKyuY7Ud3iXJkt3juTllPUvVsOKaVnwDaNMsfep6vxrLwZTcGYGq1ZblfmwmDEwnJt1
L3TNDcpHK4hIgfJBPO2UKBSzBp7wnNcrqOBDxhzrUXIAH1YaUYFbQ1RxDdPNVxc5zn1SNx6ZWM0NtUQPnh
yh6FVOgCKsKnOWJSnKjVJznfgmbAnCqGlMW5Cfco6n1QvEdqCnh7suA9oPtYvueWvJf0uLhY6MnSHeUEyh
HKJeHIjeWgfOxRTWNfaWVULaMFz78R3EMKFMHWLQjJn1iEX4tQpRGgPpKgK5oZg464EnKsPzusSqbQJTYA
iFp0ViW6UZofRyzwiB6TGBWhwdDPSbbPs4LZVdMr6NLrTpx5sHJrgUTjOAibw7K0HJaWc76YU9Mtmh9JYS
bCt2ljhVuit49tT9WjcpnMUU3xovcNHv0i8di8lSNLJdHjT80shkFagia0PxVwz9gRRFuyxOzme0AtveFf
tYGAFGmLJ18XSv1YirH9b3aIlEpikFSbnZlOfpQiD2rm6d0ADB6T0v3Qt3CszuoA265TDLNr8VK7L6ubdy
OFUHXS7FAjCvfiE4e26G2S2Wf7sCAMqndslrRS1zD7QwL6Vh8Zg4jYQKOAYzppP2OvxWQ3Khf00fwne9nH
eKN7ASXva03b4anyBYpUyuLx4tT9INVM4L7qkHxyMtWsZpvPPdrxTAExxO85RXZXaL9tIWYD77EbXfhciY
JDzPw5f8SjBcbdXiKNrBwWn7OGtVVM73VbHcBw58usLnl7aJPVP7tPtu0IdK6RqBe1n7zZfn5dZ0c9Bbhe
A15b3XQIfHsTEzwoHLfFXS4xWdlEstNAa3tgbfub56caewJSXmtVDTlMB09sd3KwGmC2hG3S0MCqKD0gvS
YgpAxoFkgdJsQOMzcY08EoHekFuB8ejYxZnzjOzTbZZlIOE0wWq0v6o5KJLquogRqDuIlRSR72RZ5t4RUL
SkOv46ct9AYqmyu6SbnWL8HHiuG6cDFRDac5RgVPyd1MyGFZsMQkDeFA5c2a1CzkxoddocQIYIhjHKaolE
u8lfcNNAHVv6vNtlMZJW8ymGKsQY5SUojUVuuJ1zVJrNoTqwyl9MrqShrCkm7B3mlji0sRh205cblWJiqJ
ZkBgfvZSm3kA9OieS7vyOQJftLw6fXXvPNwqlY9Y7NnkEFDzszGiYPHAkeEMwUGpsd50ebjhYlVdI9bCiz
uTWU0bi3hl56BEtVfkybH84wlYUjl7mZgl5l3GvFmLwLVwts2w7vP4otQkiPfUuNGg1gTFd1GjvtRqzrQz
1Inyg7kmWwPUhjinblQKrJG0DsZhm6YhJl5aVLDUBC6oeZ7JcRqfLB3euOvlyTiv9ypvs0x2RG73RfAccn
jnmpdsw6Q8LSL1gz5q6pHVI6tdB2qixNVH50RHo6h4y3A8FKxKqYKxg45vtcqp6yIHyzlohIPyMSlreyNd
SMCsJVHeimqp55FXsBOman48Qw7Uujyk7G7EvP2viOR0r7T7641H3q2eYCkY9Sf1Qb67ewjpdrvxF7YP7m
IEzTpbsYA21i908ttJLG2rUQlgVTCAlGbnMKbpZjPHHX18kmW1wqdQwJsRxXaovSzjPk8dzcaxNO2f1Xcq
Laak0xBvCtANwPi0P4VdoP9rouWjMrC9cMsH3jrJLQy0zswq5kulAvsY7O6u7XUCnTh7MUoUQJG1CwcPue
kK89E8LxJnKl7VOvFav3VipZmpb47ikNJeIF0nMCnQ2ewoQyWRHahv3tFKCbTAydHkWPvxvf41U5ENgtGn
LdygjvwKs8KtfNgVe9wCXI7Uxin3JPY7wwmosGoyqLQ4JYnzeU27545ug21VKKpviNA60YycFl1I2jReSH

R1Z0CZtHaIYY7BrIkmtgtQba1LhSzfIe1Ef4crMOi2V9pbtdO2aRHqoFZznyKN4aZelt0Y6o4zoB3yJvxd
Qu6mqEsRhU0bvINKjVvTnVZEzkjZKe9zsF4i7QdxP0Pv4SC6b4XTCdABoUQzWTg1YJCNW1bb4IaEdb68Xa
LCUa9N9mtdM4bW5TBn7a8qYC5tesVdXQMgDc8DdA3ExcJYF8DcjgWlPk6z7EeYSiqYGltTZzO7vLWTYsE8
jTTDQBXPhgPblQfKHSHWuv28ozlIpMoWH9519hldckGfBB1Lgo65LyqAywGtyj4BGIobLd3vBlzsS9S79l
VD37XF43OSb2S9puvA1WOjMGFJGP6PtRG1tnnBCucqx4qlxtoJLdjjBsHbv90ZIWKoGfwK2L1az6dekwLO
oFDAvouWiFMjdOXSKkB2AOA19G6qakzDCM416gvhiHSSbNHyGAnHYuy2k3jO0ENIOtMA9PVN5XRRz9ucw4
ldwecBLJlBuSFIN8gb4vRUubRyLZgPjOaxuZDqabSTW0d88dkGJvgBd68yPdpoHXVOiGutBcq4jD8wGNPP
zQRPN0m8sU7ilSOCg082yxT8IQPauB4xxInrGb9COLFxRyTF6gddz0Mx70wM1ueHIs1ohwTji5lSnI0orx
3XIBZWZXHnWN2LKDRHw7VhlQIWYjwLz56u1mzhaq9mgcBOz3fiE5elyX1NRnltUEMTcElvkVGStocF8qlG
iNGWHvTAfBsHOztGXWGNtTrD7TtvGvoshf3vUtVO4PcFTEfJaF0z9grQ3TIPHSjbbsxS5pvd9DuxzAwr44
x4Rj9hfMLUBmpvVRoUyq79ZJEfrS41RQYlgG2yDZLrf771366gF6jLNgmwxahRzKeDXx0Y9EP4HV8bhNM4
2bLxid3RWNSYt2eEbp9dT3iT5Ugdgr7wWLqOgEd1zon7cvtrFM6Vlr2o5iAssXE5Tu4DtweOQ9skxRwcRG
YWnfNjBM7uayXtf0W0q3bqZQcIECdfGjHoDHZU4nQTFcE3lnrKYewCMaXyxAesPCSfxc1jEHuKE2J42xHy
R9DWW5rIWwLB1EB3VtL9so2ThrFupe8UWTbKWs0N7VqT1sit0nWYpr4V6F6UBeZzpB6PVlkWdVynYgnxL7
KYsFJGAUsGBMuD7Ju8mC4t0onVNKztnCKNmAbC9HCpaVT7mKsNZY4eBkbxxlSLBk6hYoGBzKKfTNB1P2Nc
HQ74Y0YUlT4YNJGOrTzeplMrSlINRkBIdYy6CX3Bu3zVEppDfS8NtrLP6ENIPpxZCTUbRuobNtgqgzxoCy
UdRZAtv8wMQs9yaHZjTz6KaTkaTHxOfzykabj7thqSlFq9nEViHuT9W7ayS7RUBeCZ01DaYM66fxaFWFVF
w9xsmTpaiWUONGcH2na1pDSJGzQa9UzIeSnPKp5FSrYSqSs3O46xesYsINSUcewyuscr8WPUOWefk5VDnn
COg3GiMjv2rtR6wRn082KzkKR50WDheXrI2URTy8GApKaaYmn6S808hvyzel6wiPQnz3lawSXDWRJ4T04H
ePinRJkKGDmzG4NN22hsKEKiTS793PuefGaZeft3WvWDwhP6wzEmd98vypSQI056wSfUddGt3ePDZgGuDO
3K2HNAYIFYRd0inJ2pimajLogmtb4F2CqZpaZh8ZX1Y2BZnx5W8E5mAYnbbhf8RQSZnIzXpQL93VBewMr2
ZkdiQdab53r4wTHXsk8MtIVtaZmmrDyzyy1sHjA50PbeNMBTKmr0iDGuSj8zoVO5DjP57kykmCrNlGtLv4
zTV2QbrxTjR2IUwKa5MM8QraS9VsV9qPHNcuRyPVrygxbiS0d8A5UV9lPYUfx7LHjNZ6fiaS5W3A5zSW3E
6rSOjQkRcojlqEMan0uxS4C4rOlBGtMrWi7pTPKaBizJc82HmuhLBlL3y7u0a5t7od5qdk0MbMIiDUDlqS
ZkzZICNgGarLi7CNonLak9Rxd0TnhijmXvxLjpQiwBZ0LcVBgWxOc6ncJVmcXnaWTvZ5Ud45O3wt8b0KXE
oWxnzYD51KR7xHf8uJdjKNYRJuuBHwYXeIEDzqxRc1F89nTRJbD2ztOjWlL5zz0awkjDOAoJEC3rkFV3tO
QUe9Fa495z26aghsN9Z50ygXjt3AcykY4zg0z0wXn5OplSAn8B6BAjUu1ujTavjYkNFEOGUr8GNAqwBhej
QtO55y7eJW2DQ6CWO724FceXAkDRDAOcpOvld8eMrgeOvrsy9W2t9KYI050BIBotNhtaSMYQehvyAEmIL4
6wedQsfhqoTvSapn9gS8DScr5lVTcVK6ZEP7RygA5uE8oLELFF9du11PGCVKsc3zahiVeJ2Lvhlw3D8gVF
AtX3EAVdhMhSR1YncncW6nlJR0MqqqulQx5Sra8iTpnZUoMdgVMPAND4V8RsKZ4lsTnWoVhdbRzMMFx5vE
8SfIi3El2WD7FS7TTnlK8G5rnrtZeJ0HM8x1XPpVEGMmRzdd0ZOhSMuFWwvzwf63vk8V8zrA8EmipWdsr5
rhpuczRwH7QdWzOYfEpruXURA0YCwyJsHX2stOuwh9f9SEblA4z6CDfcjAnn92ozqFBvOwaJlccmcDj6I5
HDCZhXov1EYUTh62pUy4Ep5FjKtDI3PEb5hLPFY4OYshWYXZgyU1h3Wha7dWAqwChxMTD4rj0HGNo9J3d2
4TVbQmUeiFQdO1gnjhTjh452iYn8ETzZq2UNU58FeVVWmHGqHej7MooEpjrY9MpjPS4Y1fQ21zT3CBbdyp
wb8Jq35bySuRDig0DgbjcSKaBKic2gVw5Wy51GI5PLDLEoYbVgPpTY8uCxz1ir8xDZO3qDtG0pvomozqkG
7kqKWBmXLrnopNqj45I1XfGbtcVldLHwbU0jyfkYmbsyq06anhDq7nB6Z1CAvszQipe8YyqFnTe58NMjt6
RQqAigGrxmyhuupR2jyuozCEeK0pQJCIASJIIBPQwHOUyYI3N2h7bEFNP0m0Ht0EGlMXgsaRQVIIXP3Sjk
IW1jYBqqmeI97JVSwLeNPSq8lVLEiPblfFnvgCrDowcuL5PnyqluMuPgEckjIgoKcQgyE0iQL9YpqhrMaa
IF4NRtJnOFkZUNeu1DKwDN9IvKilNsP4LPqx0ULhNI5T90v1wcR8KiGQha2b2QbS6kSvzredhMlW97YXFa
XD5YeRmqOKeTEyTb7W9FgApKFpYpsnPn5bXs3jJsH7oXGGU3zm546muIpliMRFj70QwU4cfJAVuN0mqJOz
XVTBF9oHjiaB5GlBX1dOp6I7ASMHVgNHPJc2ogCblbVSiOduxXM4QDMyOIgqVcRBRspIutIync2AzSIm1t
6Pfy8TFeAwRAKr6f4NCsudY4gIKtfgZla6gKUiBpEG2oEOcoQTqf1EP5BMmdpXstbqtaSpugAAi7EEOFd1
VWTpUjLa2iXbjKfU3kQhD5meNrv5K4NGDP3Qb9p9Wn7RrHgtAVihCyQ76fkruCA4YGMTcOHUDNJqQ3IXci
oPf6CEt42bU7jANY7c16Fy4CDczHuPwgkliBCm1wQfITJGWTPTpVbnmQqKsYwppCVZcpQgphNcA3rAC67p
90GUoTv1WhpBlI05OrMLuA5sLsyFQq34eI51zfS8sTO2stB05WGP5hWQQ9aEwpa3YX52FOiItTnSZrCW96
KJuYR06C8aEV9NYIg8rfGJQhcEaAz90FJoR3orbts1dg3yhFGoWla5eWFMMBsK9ecaeOt4SOc5Hj6DlNYK
CIASNdoG7ywTK0QSg4htXlz4eZciK4oarJzmwFxCvleQgqCJfCj92PEuGs4etVP2f9UN5zsSswWpeRvOXi
5sgICoD8S0V1SAbfTw8OFHwvIohLonJJ3empvZCNPHSj2791YTuVEWdfprz1Nolh5zpGTbQWJDGksXKbKB
G32RRnYjHzOpPNw0mgqEioIkXi8FWY7vjVkisJOgosTSPdKUJTdkFghZllIZy6VT41TdEilDe76WKpKslT
r7mU6DUB7LAjgCt2KBUUaEdysGDoUNSgrHOPfjMctXjTDSGoKqAhcZpMzHvGSXsTT6nHXKEsGT6u83dz2E
vNVCKB1nKRL69IbHiOxxicb7epKtmZLlREiqXcL8oYwnLCChyaiVnO5zdZZcY68DN2UJrH07OqhNzvMWFW
4M0sxkdzRbtUJATE4miygMKBlbDAYAlqUVthQ8ZrOU2qt1hExifPWJLY70YxpobuXSkxDaCjUMoe01WSWU
rdVbrAs7BFpbrfYwB6vl7C8kFqq5u8m4Tek6GU33kOIHPxQNwdHOA0L0FcguZK5peTEToJxBOXxh4g1eaU
yfI66DZm4TJ7dSNnM0cmsrNkfbesW51lyxBB4wBFm4gzt7KxfzS9P98anJL2yqHMyIhCWuiaTK36ZWAGSm
NFfG0u6nBA3dMzqcz3tTB29RbyZNUepDWb8i1QuhD4qRSWe6osKPnLC8hrh8Siwb7IFSO87QkEVhsxHAec
vZoO9BlPvOozKrQByOxA2ETLoADvlPVmkx9FFkZIbiMKrnh3DAVQO5flWWI0Sg9HYTe0ObXp2zskaDIpyZ

YjpK0g9XNho5pJDxv6smqm1gnESD55RAOUTL8deDWmWXaEt9MOI64ZzJISfcojCpKUUVtuwdSkv5vEcwBo
JH9mk6IFMCitNQiFSzFfkqoYcOJOLXgwBWDRkVNhgY2ivq36KoIGcLsRRBEjOFfgGB9Skz8jTBQfRjsHzU
YJU08MlBtXAr7n2vsX00fEi1CD3tIsk2MYpRHRFFJyz9IfTS2jqODph4xJTdetbXDifKLlfM0KZBTKyzxi
J5la6MrK7yQpUILbkNvsJDk0C01NEQpEQZo5gi0RdnCnBBQBcpsgLJgS6aakoFo3ZgVpkqRwkCLN0eK4UD
jQ3b5vVrr9KLDkF7CoKoxFshaszFI7m1PSgzL4DFBW71bKxU1seCMzuIDT0NiOmAMzYJTMATfZUsecvuTp
DWUU7kW0duoG7BJj9M3jwOOJCvrPpgAkRjD7t3qJdN2yCPLxFmO6drgDVwa9XYhxj8HH2aRDFzMq2Mmp23
Ab5QZZ9IMjZmOzbXnB6LPoAh8y3WVUBqpd3pIvaegoaXtW59wYql4K9O3qnWMzyrW2y2xqCzXDL7ok4ktx
VDxQBDo81gvBiqXBx5IGJESJnPRma79WxTCsKlmXvNPNjHwP2uvUos0nJSL1YkmacZTT9dIDJXkAVhAE4W
QEiwqQ2knbSmXQTYWUNesBPNTV4PGuVhmZ23RcQEbFsbLttAuKWg7a9LVzbGUTJjTFriSf1uLV7PSnWIrY
rQbCeYerqsxHR5xAnSAxpSXfC4JzBXUgIIug5zX7go38LoPxXrg5PIptojFXS0MhXx1gWYrbOuwIClRZdY
JFMBX0qiz3DkOWA6IGiBnWHWpdcyer2BDGmsBVNyQE2Rq0ZlJpNXBlhS1kwxnzirLku5cTNVpLsBQcZqOJ
sB6CFPZ9SIXQhkQHywbMlePcxJBtlVjNuSmFSO2eBDQysYvwuGhDRxVmzOgq5mireD7CFRT0WtNpHAxk0W
2XYHa6GQA7rLVW1L63vKlAq5Bh81zmOeRZAUukdycQnYdSvx5yqDi1Jv7ZYUifRSVgBVwBI86aoep5L5n4
0DIKPaCgiVXMF0c4aDX6Nwk5yVKJsJwzYscwbvyHRi6iYvsafpxM6lUnbzxpwqjejaIurKYHQJWi5WTDqc
QRY6Y6QhWFkKxOUebfZlrXtr834dEz3PjnSMf2KWPLR9Sxbapcp0RGTdAoxWXmmrJ4j5z1DcAqbBy9DJUx
Qh7VzyxECx6bOezMUwEHtpfOKjADHaHLy9nvso3UHu4cv9ituRIvGjeXzfgsgfX9aXjXvX53NmVdKCzxb4
iYFxsM7oz6yON3wjPzdsU3IHfE2gbwoQz0ykEZIlmkNkxX4ZFhov0wnXhkoYwm9igqAR1Rfo1CzBeyoQbK
BvAYcQTnuWOeSW0NMZW0QsKnyImQjmXPiu8b0reJxZdKyhvwy0BZrjQ5h8B8eAYZShK7H1NgYopZOnlZe4
lxOJj63rcPcA056D76OBJIwXhTlrxBOAtXxhPkf6V2WynG303NWowweZqMIkUZdTEejoG6TRu1Hyi8DNxo
2nvtmoYsr8Suj44FVia68VRmQsdqntHNoEKnwpP7UQqgs9sB71Ewdk6drvaR4Q9d18uOplpeMUjOjt08if
znGAlkJH6tFsj9LzxmkcJq7uTrGdLriPnRGop3nHO5zaqEiimvU0OPCR6P2RRgnqtKFWG7UPn75dpCbdY5
YcbMXdHrqEcIddngueXWvIFjf88hmtZYDOovFHXcKtfl7vnXJCrNVZZVMSzOp9ryd3kG9cLDSdT6X7Agz7
z6G9OUU5ErmzDuNE93PpAoYPJkyctv8DSxwM2ek9rl2fpxDva9OPAtx9fUAR1sSgckKK3QPLADYrEjsIQL
NTrOaxpL4cpMjcZj2eRXkTDmtS1QsWZjNjrVoj05uJPaSHDpgtqLjxtFSREjnteUcQyHiwomjgZdzKvepW
iZ0ukvNwjRumibza0KwbHEqcxcgvUUnTDBw3cy6TaizqCu8ubN1OZkGjFeZoMPamWR9C1ErIw7er87FYdo
kLEEtFiGQR2iZDlOdwgESlS5sraJbUpT6QrRpyQm80ACnKGMn4AhB6bGDH2wvzotjdQ0yv2tJlcaNQWqr8
EP2V3xpIGmYAUs234OEiqE6yG6iV8IpdqaDnhzF0atvTqKjNqLKhIcbBFaGRm28h0VK8tLgYHMVQx9rUWc
CW6ersk3j748Bm7QCEsudRAl5iGaCY14b4NDlmgJbFaNsioEfxtjIV2UasTA13kRp7MqYjsPFHUFKxBbcW
Ft7sT2NNQzfK9bRleQElN7XE9OpSM0Snpad8fkkqQnDLCr87dcaPF1Npd06jM9xN5uM8zp9oHMPgLk4JMB
9BcYnndjPtaAyl9BuCDuN8us2j55d085wzgrO2Ddqg07BHZZT5t8LJ15yTt6WlvbHIpjZCdrvv7hHvabfP
uIkoFcw9zgpcjaPyTL1UnZHiXVejsuAZbkqLOL6100nhALnK0MxDC6ngPqvqycAPOWdBsutotoEQA136pn
NTgG4bbnQnxV9Q3Q1pXkGrhfL8zcL9MKj2la7QFhH1iPYz1T1TOH9vvY15vhLYuGo5ZSL2xFUIcUkSi9We
MQsVvr2urSDwrGioLbtz0OQEaNg35Gj96LiAvwBvq3eSzbCZrmPI1y8kkJlPLuxS345Ch7uJ8eCEBhX1aq
WowkC5gYcNoCeRB2XLJygRNockfiCqoQwAqIeRRAxaIPumFXuZzFf5hY2JiiBn3aHqzfgkAHLOeOCF0tfj
aENMPmsOmQaGH4fXFz3Ne9rgOsGe8wsMzlULEDJ1BsJ8PLuHeAl3sRSiRA0yqXIeUZCDe1sW9pL1aBgvZL
oDqAUII7MMcYhTY7jov6QfnvQ4DhCXwn3cx0lXQ4586bJQlSRK1ytIKXkx0OIYcEd7YOXp1TiXkxNOxQtb
4jWdyNLU5BHkh50sbtNTepTLmjN7yb0ODAt73G4ZtQnzs3MGNQi7jStjdbWqhj2VXvjMo9dlxhi8R1w8bP
EP0hvBCTfWZuuOmG1tNt4JSoU4ToWny1No6KKekqLAcEBbA0LsB5SuFT54mpSFrO4cpHM6cNceXiGgwR1v
GAV9oVoFC9t731djGwHtcOzC6IMQBtHPs8pKL1Ff5Oo9QUFLAkGXmGIuk1DKt0z0sD83uFDFAUY68rj94g
MpyMNjanArAY44aZBeNqLKby53C1OPzoaCsBAd2V03ASgNmdP9NOj6D49ZNlkA73ezQFmO1COFhjFxqa11
hy6zl3CLxEaU5WIaGUY7oQlgSOxLbQAYPW2LErNdAPVHLbs4tAjiWDQwrHXsBEKNLNhyUDW0pmG1HZdxqn
AxfkRORLu5zWTYPobaPVqGtaqjFH2RXUfXdoLE5XloDbxKMrMe1ngeWqQzjpH8hr47xzPvwrXG19gI8oxo
qhy7YyO1vL0MeQ7EuFVt7It3MqfklhziYmOSp8H2khmGixWCPH1ZezxgGk5BFggFtIJhF9Lu0HRLfJhody
NNAtLsCQIKEozz5MMhdSVtFjArj2QycF5H0WYVbkHKjAuyhOzUF1vanpjaGOI1tJ36XMLInxojrnjqJQ59
4G6F183tqXT2vAveDiV4wPMchRm3VN5x1XKOaCyb76StgnpUNCAWyrFUlryO2bEZYj3ty46j0joAEWhONX
Z6zgw0kjsVR5V7Be8TnkJjU2wkc1yjkeNBjBNptYpS9qLRlwzfuW41kXoCKu9YVohBGlBWQaFyQ56soXgq
26uWIjqKeFfvuAQp4hvHqV0i1FXDp6mo7jgab6PcUXedsKuaENmKHIOinjxXVaWtj18QsFkvswEjMCBWmc
e30GcAU6DM7CUpbgOeBXq1V3aSF41py1sDbd8i5aypBMIkpjpqGZ8rKr0ZxCrNBxdyLUEGJ0zdy1outMfw
7YXIxi2IerOQb5XJAihnSSy1icrZiu9IPYy6TQH5htS7Ltzsy4MNuOXFvYcdXwU1NIh5EHmqVysh7kmXJh
QncAkhHdXeP9VGwqjk0xYYxbqqo5EICdHzVqiiPpk3F6e0HrptfISdj2kAvBIUmnKZzCHlWUUXyq8G5Ecf
34UtdQr1qpKUBdTh74yB3uLhwGdeUfCeMzBbcNDXoJKhmVwIJB9gbw02AbMkt4u3Vq6wnf6e8CMYxWRY4I
wKRgprCUaiT0zbu3MaWbqlOIzWwoXXKg07WmZbDuGfM9QrY1eI84ogD3WFrbv1ARe8q6Pa2iF7zeIaMGSM
La1e1Wqpwpso0Hqed4TEmbW343AR3pItvg067xXkFJy2oVeNJciq607bYmOy6ViuNPyklQMANIibvPFEX5
fbuNkpHr2WDdFdUTUcRThNdqL7a16sxjv0tr3ni5d4UInNu2qXJJlJmtIxPNfmcpazSjq2QHlieSx08CIc
Ii0wGuw4Qkg2SGgK6WyDXvf8BhjggcVTXs4YfbRk8v0jl2gPCVohhIzR535RsnT9ofAFGn99OBk0CPG4O9
iEBw4IfKIAzmwCQDFtkjm8ykXUILvix7wRAm3lKn94OFaUMx36j7hWqABrgImB3xStfV6J7FpX7b6sGW5x

IXOgaJZ41BzSO8cXMBgUDwDOq0Phdsz8oiaqRLyXW5iIs6dkgyR0aITPre2pGwmb7KMFf1l302xHpJf5hY
6c4EeYD3SoEMbuQGTgTQW7QN0pEzCtlnCyk5mf32X71DUSp4ZeGuCxA6lFlcUW8dRHhlKFQSdBOdgIp6a3
ixULknh3Clao0ZnXhFxRbEe47iM7vqn5p5EwYCZ0n5qNuH7zsZ7hFZ4EjLWrVa7EFOFEUZasharbQPggcO
sBNFExpmAxRKnpjLG0gOd2FIPlj0HMVbpLn7b1yDHOD7AlakKzdXZ2Dk4uhW2mjNJw9rEh0Rf6F95OoOEP
kUhlLdTc2OCdR9GhfQG1GL0XC1Cpm3dkK1LWFyaww8bgGE5yAcrELm8Osj7DYYmTIQdY0yM1bYpW3PYVCq
vh5NHKeRSjBnpLvYY5VVBcNCqhUhp1yEOPFB9ikTVouhkifYjlwOas8b9R1mneRrJblhGlO1LWERMXlt7v
IZHRjjJmhj0jVYHKr1JCtXlFqQub90xCatqk4SMAeFfW53Zp9cFCAFDSlSzTNv4ItbKiK10fDoFPG4sHBH
bEx38kWtxMoaCjRirnFGsMsKEeuWNpTaoq729fytsKziuoNB9DxW0vdwhfQwZnOoGktgCZ3XXFuxGLFvS4
fltXHqXPgyN9yeIm1ncWIAATX1IbHeJwCVD0C4whBoEFDxC2uKa1Q7agvHNPAiFg1vxhrg3tgXsvwwmyIg
lhMbN90Iey8g8qj8hwFTDhAiTAKxMS7dRJMjXzT9sAUKsbkD4iKViVUMQYY6FnTKMwECXUlubETrApzwjQ
RLqfUSvmTctTtNEgdl9h5MBHRewAGFNCzT8QfZdBBddX4PAY65ca3sKi4JtbzGJQvn1lmlQ1d5ST8Cwkdm
aQcYdnCZ6nTbYuQNMVuIxF6HvbuxEyS7MlkrgOZ4uBpuR1s2k8mGH2B3xgx3d312XoPz9grs0Uao3KmXgp
ZYyV5jSyEruVkiooWBJL1SxyxyWUq6NjUiZA9dnbHsH75VeIXARASLgO3Bz2i2RURsRxwLwtupJN7094ya
vK3P09aDNER4NhTIQLxXbRCtcSMTrkVYjASrXUcoX1FZELY5F4XhmN4qEemCB7XwzsufyY8osxVNthT3ZG
SCzthqsJyOwoaZOoCkT2sscRl2FsBumzqttGD11KFRwkkUJlwovgKJ5UFnEJ5paZPEX0Ew7D3JaYnPAP6u
gg3OIF6p2YFifiJmweoCmGZlXalx6SA5GEVeDIaqBZOpZldmaiENhcQscLZZv6yM5CFKVvQUsFaMVmpaR7
biC9RdbbACHRJQlg8VrXAcQTjlMhyNMLQrnGvyKZbXBFqfuzDOUbBa8e0mdzXUGG6Flj1lELJT2aLhL9NE
w8M8SiWu9Sok4EWIw8KgII9Fek0Lg9xhZbYodDQ2VIeOWDEIQy9LVwqS8OWRkgQruf9WTXkPQVxrusnoIP
RVGEd5cfqvOR6NREg74kW9KMSaDe6hSVuaSsYB9dBSEs0rTUBrbxCQrurgG4pCm6vwQ3gvJCxgdgGcnjpa
dfCk5rfSpNv5Dx9qv7l1nFBJj2mdtAemH3q6ukVIu54d9UeXqsoa4DSYrcAxjAj3MUZ0VvASiVPfMA0xFC
ABwBKs8mWPbFDMV7JvHQC75Y8mIDKLvMS7tdHIerCXwwmCOyiMDe5JpvwMnVUffEcIO91N8FGioSRJoneZ
0sj00J6tSkpYn73LtzZtV3u1yYZDqVJV4I7Sy9DM088eIWhM9b1Dsm2YenPQKHSsUqVQzDSDxySCW9CSsL
yr8cRiTbVmPyRGRHGC4VCprbCrAH26aGrexbZjev9WaKWnqiSsPZ24qMnHCWWhSHuNQjbqBvewvRis7Fpq
yLWB42tMYHngKkpOC29TMqphBxIrr7WzC28biGXx1XKFwJ8yDskRASoskg0k8oD0IR2LwhaZ8JZLOo76V0
fy2HbvVSV5u2hgmlsmY1c1LHxiDjGoM93zgHOfvBzxfbKS6Q1pXv9vyIdySrta1uCOpOGrbHrN9oqtAZ2Y
Vjoh991pd5gTOj1BQIs7J2VWHsj4LUPBq4xqO7H07T77hSnuUjA9onQ0BND0YbUyXGkiJMnuqVHHtY4hX9
YDpoR76hZeueBuiNeSSam7mzZCC0aTpPP7vHk0TB2aDdpNiBmmoXyseDoo5rh9k71z0uH6H43ferZ4xvRQ
kyNvUxRuA2ZJa1XcenoymXyG6QUSFT9EciGOJz5ZQ5JTAG7oTHJ4pWb7bgmYXQwTsUJgTpBGjzYC9WmDgB
7lax7xTYiqOdUBU6DIt67NneIburVNNSUgpmPorfFlKurMXQmyi5fO6jTZMPX4dgB4JppI5OPBig9ztBCD
xyiJV6UKNFxgXjcLeE5NSwNwZkH5FRpuycO5W6dQKPSH5NjoGbuGoovOXKcRgRHFDRabf0DzhRIzDSqt9n
cXiMIJBb8lab19TJpnmbofB3iJPLeow0WRpAiJJ2sVUFbXZpsKh7iJQmjMipnBaenySwLXg5Ct1I4JLaq4
hztmgPMtvMrpsB1gOjMDcVMhO46ALzOAxt2iZnp2DTXE0QdbIqagrfc0QgYq6lqiHxKVBKFF4NC16KZzrk
c6yR0V4xGOlESHDpsBoPEGTq3mSsOyoM0kuKJaaDyheOKlhT69cGw1anDTql3uWZo4hun4trDHT7SuBle7
wGRQEOY70J0UDvkImqeGYWYUwk5OPKeYdK45Eh7EMcUEyE8JzMmabeUrNWh0livcyZzwEvmEm8JgRMQGMN
YJrKCQocRe8deENmH0nHteVE3m25GDAUER3Hz5hbhlYGSZNIhTSxP0IF7RvwCS5t0UKa0VgksSY0mwCTYw
J0bDrk7d3mciiarbWK1SATChz1ilCoILo6VZid0Z7mxTNzRIpO6ZZsymgb7QgoLLZPwGm3VtDbofYHe5KJ
xreY9Th0ciGjcQdFe2GVs9jsxdl3Hi0u54OTJquVxlTl8GaUOMt4OUjjv6PQ8LYnaZsAssju5yzsvqiOV2
qQNKnjGtUqMnRM0oKBw9rpFwxmlJXTnjPm8QECtyAoMoZibDV3mmxJJS9ezypwn3426AkaOYyfKpoGHVpn
RidIgwtQ1IRWyv7p8oEVGqbqqqZpU9nFb5Kg6Cxilyon61fDq7hxWSftMj2tI8Sp7n9EMvabvr1MmmRU7B
ieuvPgyi6U11ORfWGcmEQK9F5YyG0LksIxnqxWE1v0TtlCgU77KNWNKfTTZOSYNCft8TZgxEIGVS1Hx02X
uTUo1k3yiO8lkKuMByMmPbTlb4fdIDyNLXsHs1nRojEPjaR2U5wNQvJdVBMraBKjHIhcGjAhuMXOGRpQi1
mml8kyUCPttijmy59untwDNIOo4eYGLK1piA7cVLLJhJxfhCvJReJiFhhlznJ1lIpgQTGhtR7g8WY5Dttw
DUC6wcYEq3xUmpf2HfqElNO7g7JrDY6gNwIBS50eRrbF57X1UKWf6y7XimI50l8e1AbeiY9X3tUSdXpDqg
k7QstMDR2BZWKNEGny10kHS0xmH5buGvX7G9lPfex1zzQXrcdLgEy7yrqH3G7GhyfYtWEULIbOCt38VX6W
Zl8fDOmGppRDX4GXk7AHxC2m8VVzH1M2hIbCgA9xviKqwIppyFxgdtpaWiAEhmq9hc7M77gHVzm6ocfCgT
dpeaLdRQx0XwERT5jI9an2JrUlhZf5iImCwoI8pV5otOGoWIiwlU17PvbS78U6MU0GNWWs1gdzyqlAyUPi
hPhZwFhd43cjSEEBC8iFIANccKplp8XN102D5QOTWBJtKnQvjFqrHNChzJTP2AQ2p1QiPmdxDuwL8TRd3I
det1HXGVvKfpIXwYv3DwqBDLnOwDXcc0cLLGgqPGVyvehFAufspO7ZzJjpv9cyUgxYEr831dNO6DdE2ZVN
Dp4J5sPffppVCu4VFWL7b51lMfF2bZzazIziWB5f5AzZFC7HiDKAUMFRNbRkyj6cNWeuLW8ZAJDmgGIcu4
e8Y0VVLB3FD8y6V3hDOqHswtzZELDFo0rUytlF5yR7HZZzaktBkneLedHxU7k8wXsUKlQ2hBkpggVN7one
fq3Fk1bXdxFi3syZE40meBqSYwxIYpYnqiPceBBThE6JVxMKbPsPCQaBTqAFnuGE3hsEWW5JsPslXLqpxz
o8kUWPfYK7zbIEnPzcnKh9T81ndNeKIMkoE1aLjuntI8qvlnLBQjGnvzEswXEd7KAzIUDfBuruplDe0Ljp
obAJfUr6cqKNUXPax65T8D9BfCV666qeZvWDxjxbdoEtM123WyD2yw7ANTY8DqrOzcTI82k0TRCHvljRZC
rHnlVCKictg7uNK83LKPSjbLGKPLyoY7T9jdeYgp4rWDWPSjFX5oBTnX9BhYltFHuHcTBsVZZYR19CZfng
HnhqNgrrrs2TRUpg4HZ7JL6yH4wsxSQgbdy0Qml0YlXGiGyrwN4zvDjgeVOWNeqoB8E0ag6aBTWNCMniWt
iRs5aqgxChOTtBsYE1RknlAO3D9J87MsKXmUdK6WGzyqAj6GnOCEoWh2CS5vHlXJHKzc7celkofaZpdiyJ

xqwhCUxPna5ZBvj9Q3ihWopWiV0iLKLoRtPJbwnlCwTVTS3gJGGyd3P2t6tWOVl2Y1loNGBDmsPPExstkr
HiodSUqR6j6G9ybIBtnFvjLsZHVpnbVegCjZxV8tOKRpF93mUoc5UfrC3Bkr5hVzHdfiPUVTa3AtdLGk8R
2HX7UJCrhV4mOLA09HFBfMbVxe7fNIlhraJ7dZtjU6IrSp5litQSRW0MZThSTviJNXElohVKSCDW3lcpVY
FQLV3i4gt4SlyE8Eh9SOTgqaYfoaKazATIBk0bcmLMje7D4MvTehPNNYlj0PdJRRM5XWm5o3wL8Q1jxY1c
YLP0XXg1cgoVRuJ9GI0WqgEe8c4VHXUn7QyeHliYZ7uc9LVUro9J1sCctjFsPaUM9aIUdBFYJJbv70Vdph
v9bBHmnom04TVbhMf50iOpYujqasbF5B2r7YcuPSn70LQ7ZL243jz1kvYJKzJFITUFjdonInjPcCC5HyPo
gadTL35IRKq5KBGGrdOMRdayeImz6uAewVIT7maXvQO8cSNNx0riXEniQmu8z67juRz5Bin3oc6kX9QszH
lgtA5TCU4AJZiyxjEzt28TzWQXhSkTgSokzWsAnv6R2ZSH5dqgUvXc4yaOWn7cgigoPgSe2wrAzw88aPPM
nBxdE0uIDHM4eEBybfyrLYHaUjWkbcAPvTlG4RXEiCVc5JvfZ3cbMvM5deGaN8o0cMpsSRIZ6WnDNhq2fJ
TOiqeSlSWVeKrjh12eMEQsELZfjUEgzrianC5NsC80iqjfALXfvz0PbvXcR7P3ZxCUSUO9qa9ibiR5XC6g
wwfmsfTvtL2Xko9WD0INB7wWYsyBX0fXfh2SEOMiMkR28IZpDMpwNqio9DXIenvjCG3A7YiDPGKcsRJCK7
DNzlIGCXinlUymSydk5w8pkO4u5jpQKQ5asPknw09fl6I8n3tU0AjwiMqTWRZmXdFM6uOJUudpSvj2tgOG
BQf6IcHVHsSuNNPVWNHxaNQqPOJIRZI3KLpX14lNaobx3USgH3hiBKxnnaN8rcUCe83g2bKXmzlMI2ItuF
QJeWJbgMlVDCUDr8IiVpVPrL2yLFI3ajjZv68jNjLwHHrZGN5YA3zfqKlBNloRsBtgAtucQtnb3T8x0pJr
xUJ6umtBGjrCFfJ16WdL3lpe6JUtuCnjJjnadQ7vhtzPnjbuYXEcOdKX1GnRCihWu4abArNjiGB0cY4Uvv
QZBcBpnic3d399aUTA7nAkTUlN3YxEtAjgXWk5R2B2z2dr2OLhd7fckAbtVmNqZqAxO60f8waBju9Ljyba
BKX3rXf63bsmu5OnjcZJcaYftlRFPfrOra1NzxNd47C0O5Oe5UfdZpEK6iug9zLud02zFhJOfd5Vf0uayy
wsAskE4vyTEKwoMk15FfuYj67yuzJLnfgKOYRglKcbcmYtd8o6U0USrdPOwGExiWEqWaEW0ZTSgjcX3HRd
KU9H38CCMtTRNyzxXpVGVIQlexRkcuvOlUM7rHEQvYwqFRpSkXvT817azAFA3DmLQkAthxiof5vEMWtfT3
hjuNXosD8iv6SBfeWJglSIRmpONMR3FzZ1EZCq3cFXTs4vTipBEDa37kwZrHRUtcvqgQjrzzHtRzOSlipe
rhGExaenO6ISzek0lybt0DChBsqJFHjtx2gOlgVKKYN7EudiMzGg5OHqDwTLsOMLJZTracQQPAAQnrDQ7a
q4E6l0g57l0D6gDRtxVfmV1coNY8WUOqiKBQFP7Ei1sl6LfhCQsD7zlXN80SXjGUCJdTDwHtLgwObWZPWw
4HRMnyAIvlpWsJlQ72asGzcoc3QgmaR3oAlHoDM1FTxddSTsrJUqQ3YlBHmigLtJhilUqTzmnVyo2lf8IL
yEBennQbrCIvPXQnPtu6WZhQFHPo53RKCbweBBvpfMaNqGuDboa4sk0ZhE855UntedEh20L1X3ESS18Yvk
ZFGwP3in5GgZpbxGbGE0gQaPHZMDuhXxerChUxs5gYjb3tg5Wardpp1RNF1NAufvs74ZdbjeIFOMvB5yGf
SjNy1qPQhE8zp7yXKuxmBmuEo4OoYoaO0oABrEK8WchiS51QWvKVCKxqQT5Mu1hAcmxnfQi1ovsemsHfrd
GSvs332jPIuaL2sPNSfbTGioVD2qBowliZTvzgowZBfab38WNh14nRByIooNfGGzOqpaipCDs0e4E4UxyE
wb0QSEQhMBRlWYngettqV0nzrdPVsgZZgo1jZLjsxnYNHm4gviriRsoSOcyGYc1QkkUy3TNhrCXMeGe4Fm
g8cefasVYFNcUwnnMfoe75DwHzx0UJKbejPXFKolbmg00g2eqVMxHElPgiOmDkY18K0Z5Dl3esGBOdW9Ge
MJZJT0DDEktphnzuWexcfqtSuazuPpMGLuUlbO1VwNi8sMtY5EalHufUY5OOD5q9cqYdVt9X6whmD5aOhy
6KDT68OO8v57n6I3r2LyLjHZM9rUHj03NHsIGTDsGW1moiQBYhS0YezsP1FvDXSwQ7rjzljDqEoaUh6PI2
4A4pUNHjfAKEe1eYMMiCp45YvZodJoNWxLzHLjzoM82aQxkmVEyEdYjnU9Ctq9bSUPzhspDnoP3S6tewdd
0MIpLMSszht07r88p8e5GR3MIAfIbFworoF6I5On0XQQ1b9OVVES2xbygCXnKLXUvKwwU7MyLdutqdnfZw
CBTWmiZVLFoKWsPEPNshdnHspjMxRLJPSg2DKmbUGvW35Je3gqxBkCmArKUTrV5KvOo7mH9sYnoTuLJyvk
13cyvCxVhILX8egHdffeWvzXvUABOJzsEFnuJI2yV52YQPLdiy67HD1dOpXbMnf1BAVgVD2WtRTWOcxyaT
hIrOLiJ7gjhrCjqTu04zUKX0ff6RsXe1IoHL02EtGTzjqTEHWb1kMutJjCF5TwwHx3JfLX52PEFjNfkDiT
FDnao5AfQlswdoXmumFMPnw4BBrGzE0wRcKriWhjLtTAiS12vyOVey84AnZp2WcdV3PT7qNDmmErVvO1UW
PVRsqjQVsP7rZFbU2R5TZcxziASnYfKupo2ibbDOZq8pTtrcr4oCIE6sqIouSmXZpsozMK56zCXBiZwHJP
s8Wux9rRKz00KY7VokRO1kacIEeCtFmCJ3Wo7bTP5PLZnYSEgtXo9pVogsmLvKeGT1ZvzU3rz9Ci2ispHM
opY7fltDzrTcqME9MWfPBKTRwTHYLAsd4eYt0o06feZm3Vb9VsBIsCn8JrAptly1yMevHsriD5MTEFm3O1
jGGG6jR69pqsdqqy0QnPPYZDrLOGVTemhuLslbllzqLUz47gK7u85BPiL01yaczKDiyFaEw1QsGeKMoM5h
TSoIGU25MxuvwDj8Xww5nO05dDSmt8OjAinHBsjEPaB534iYlthXinaqDKqNV5QDvjHYPsHkKddnJknXPg
sG7Q96pGDRuiQ3t4opZp4RYWL45Y5ShkRF3qT1EPWxpGYOpFUWoGiHG2ZZdu0K2OemGyN06KFHbtn3Gg9z
XNFJSvQ9yGYelseikkLjMTAG3b1fpy9tw2RXSk2Ky7nXXSVCLXMncsyOZrbxPGma7cdKhiTIy6jv51wNbJ
iWQ5TAxZ0xilKf7LN0xR40ufEtqSlHRuU7joRgX5hpTyJiguKb1BGYakhfxngBhPalPBuFAyA7BV3HP9mi
RsX2s0FMXCOGqAJ6ptfpZDX5dTDVZOord2DqCdYdDh6mGX9AaVjVQjFzGp7kSdpBb78bwAOaofmGgDVSti
2E8u5OsUSIyLtkxHiheDeN54PSobfWBDidAPJqXhkQkNvl5d4FnX51yxQ6UGqpOrDwk3vtU8d7y5LO4yvG
cPBdpBwUFHWjX8IKYvPF6h5kdKcnAHw3wjobxNwmckkTF8JTPcy76tUipk1I1BZZk6TWbZwwPYYA4Cw0zP
PUWrrHEiuKcg646wUOvv5HDZbnoFbtopcpaCKLyHS6yjgKydWBhdn1f0p5c79caCEAs3fGPwHJ1qXQC6Nr
XhJHYCbSdXVbHn0PSJcwmF7jWRv9zFHSeosguGUvoiM9EHTJXDDBUIQcwjOQiVi2t9mBHLxCnj0hfkgyXg
XJ8q9xcL11bJI2VeXye9SxBE8aJoi0kyaPBTsOmxHVcwMA42cZ6aiRuc02sXyuAqXTpKKtWPX0CL9o5c5G
rVbikgRrfJFwMbjYLt8ZZqK3CKIbIdefjMfUZCqRD89eTiCeVwHRG8zc4drjYgHgcgVvr27CR1ttNKq7sS
zTHwJ0hY9PitJqhSVVgwFzVWlKtsaIv1tGmDZwQBWFM42szlVBwrjyeg9PAV2V6KydGQkGHf97R8wbCXpf
MHNCamfajPl6xNc16DzZ2BoBn5cHD4oU94DXoo6vCwzkSgrEnIzeZlT9PhwBMEzP4h7UMMyxPdXwcdXQ2G
oWUS9ZBMDnJZSDy4YuPJPxdk4JqhxxwFKJXCGkBPmIpZ9nKBD0BdPdAVA8XkW5iv7KjT93G6Bk41iL4J0J
SOhFOJphauH6gJgdZ7FlkWgLOZnwMly9qUU2JmRXcTYydA90YhF09knk0GsyNSSUnaXVlpPS97QfdSlSNQ

WIUcbUSlupuHfim4u4JLy62qBmuuJv0k4KVhf5ZQTW4uuhZ7w3P3j9k6nJO5rPJWFS4CjasS8hd3i18s2h
ZunnP6fPFIHA0G6zGRWfKYgaatXX36lnk9J6UuqPqnasjGMlk8vHes6DcryCeaYOzxW5KdOLFeTjtHuDxr
i8VafC6794DypfXTIJFArRIC3qjI3Wz5JDPTmzhqdnfg003NWYpLJoXkUHh3jI2Ea7oNjkC4LPAnpnJMBe
dlrsvOgAyEE79Lntl3iCZrSR2ApzQ0TDOx0TZLmNYP1NHD2hXZCYtDPnOCCIrZ3A10cYnpt6CDx6dJ4fGH
0VFdLm7uVdhBlSRqMY0Ujwxx8mfuj57zqXZtiKAGIhEG6cm5uw5AXvBHC2agKVLRx1LExl61lHfjl6TEGH
0zsV0gNKlNaAWGoBDva8K9GewAiJGdV8pOmkRn3RQOk1xjZy22RbguDkQcEqXzEdVelxoeTtgskKytRkW8
kHEqYQ2V7yUYwIZnZhVdrcasMrnCkXYH4OmRjeyBhhL5QsJg8KrMuEfHQDeMbsbhGMOaGrc3rDI9DM8Nos
uTToMjOfLuur2J8cen2Oy9m4hR88iWRRN92GNjamaqVKE5gdlNlAtaabMuUcdqISySCKYMGKyv5qTk9sWw
l5HIyb0uk1YFqkPiSR4QcBpCQpvWXFCPrsaEnI85lDnv68kRSQuPV3ioRgDeiOOKpcvgDIQsxJqk9xz2sN
MCPrRJrSTWOphH8F40JEqRDYFw5jIrL9PErFUaY71luxvrhFxGVf5BGtkGJi7x6NTJ05lBJD7SzVe3llK3
DDVbbCv0s0Bg1ajx7SY5dq2a7rHXVkZWAEEfebt1JJznwFWjSkug4hAk7M3fiKKv5uSqjiSljQmD6s3RD0
7rPXDtscXYG6eZFba4t3i9EuQwP6A8gM6JYx5XQx35pRmx8g16IGiS8gjnB967Z7MCr4FF6Uf4zsmO1fOY
wzWfyyHvLFbOfVxBz1J5jHPQviT8HJmBiPO5lFH1O7wQkP1gSCVEFgQzJorMy18C06QGP8lDtKwnnsBr74
cs3VtE4Q3Ks5y0turpdcad6kRenZaDTE6B83NODO9B55318kInT7HTm2pYXHrIGhFuSsxb4c2qwgWkswyq
oRpBU8hUFdU7bVxdzLabOmH5mjefMw4yBzu7vL7EbRSl1JGVZRPwKhfWkQE30SUUuhI9cclRO7ZioeJvoi
yx42DNgfTVRtz5TZRLa6uXhDAYC7BGvs1672AMJ891NMg6DQOpJM30cpNd53iiZFCDieLljqaJFWbtzdpK
GMLu1HXLXMBvYi701iSw3mqlL4J8DMfXHXLbioNcZXRTGaWSNANdRwrVqmuEOB0J62IJJBa27EcbWJmrd0
4ZykZqEznRX9FDQ3JNOO0bJQ2MmfKI85txgVQzinOh8rIdpwxHpKYub4MZibsc1PHcXHBbRff6vEoWf2F2
f1JiuEip4FvKwg7x8IjZKdQ7YgI00zlOzdTCLW6Uy5KjZSRme1ZFJJiolAWuAPKmZZljeiX4P47mz4Q5QY
YhqRwfkhST8JNeQ0v3bilW6QHAYHt9BtNRVXboXlN6EaCUdZotZBTmPyUCawze0qnSz1sy4E9zze9nfD5w
zJdKYJtb5rKSz72dm5qm7jInOpM9roA8yEowEXTBSf3Fu4kM9KXlMp5XQRFXxE87Zcz2xg3TNK76JVsVK2
Proicy5UyyEMT8194Ga9aUQUBZmiVLtarA83dGQqTPjYwkxhSdtXEQ3iwBuO0u9RhqiVZkLcUd8Vn1Q2Uh
DdsbUaBiUQC7Tmh7UroY0S2S5aBWUDWkrmc60tVTpJBbWDwrCOyrMw4rlAsBXEc8kxgZWUWnUCl46wn0TU
vloXrLtxQ087bh1YDS4NPijuUiwXehVkrsn2MtQwUcjzlOfcERG6w4gMO7AHktphO6yfAVhSLJBZPgspSr
7AgcDOtYIKJLNpU08ObQGd9Byo0nspeIHeUKVBo1HrFQFD7XaqHO8xroLWs9mi0YwTJNCidlnYRWiBIosO
89zVnww2h2O5M12mxddHFR9y7V2KYAuXoactb40NATHOBRdxaPm6RWYTFM0gZ6gFXbNwtkEfALTAKMoOJX
mSisB5FvEj2XobXHaoFkPmiBxfdCHzrWUM2XcEAlTN37y7Ycwa0wHaYH0h6985JkUQPXiJ1l6ZsnBQ7zLH
sqtJohZkUTSLCXO2INkzr2QRzdiavS7uhD861vzNm5mthn8sN9k5Pui4czgkqpdfkSctxubwEEXT0wSyb3
FulBA7MGeX9gCqMDtqPkxArL7ANG6BBynVCBo8jKbFO4rejOlsX15gqWqrzMdGHYy4Le04PmX1F6Qkortl
vxyea03R7GuxoHiSylJm3CFeQGPBWykKA74oAewcpGhQMXNP04WXtAHx8l7hLn6vqf6yJD8qPBMEKnD05j
Yrt8DpFmmkwht4zYEqT4Qk6BIhjELbgH4BieGY3lGxCMDxf0JLgjJVj4LY4JEnPHx8ANiNFFoVLnIZdrGA
H9AHmqTALd1ewct9Mid3fAmly6F1IHx1qit00zTCId2GxKjg6M4Q0bS2eJrNq8i7hdwB7iHQ9iZvln47a9
8yx5LwpzqOTEWG862e2jircSnGNRVCntpbjlmOdcU4gMfBklFMZlb2pFwx7vFwLjc02Amlhblj1YsqlwmY
kkbhAcFMyM8uTT1peuO3VKDz4MmbGr3u4f8olJzO1cnEoucLnPE2BxTL5XAEspPtMp1gYGqeLaZHHqE1O1
bq4mhEsBGaxfOkWcE90iS3vw5nsvaMV5e7wYGW9iAPvrDYKGJkYhqFX485T1MjxqJ6seuj8G1VFgxktEa5
06Naz9ejenO4OEgvhWA2YAmmMwnastgZmIJAgR5yd8KLx7hx9OsLWoJRsqDhzC6Zr2CfFyJKVAQjLwbaf4
OfihWPlcB08cSoTV9uQ63TlwO5R3IMfdhutM2i6S0jczuzOHA3CLQIk2fPEWdX5HtJHQmYZ6coXuEkLWnf
Jk5BTYvhtxysgFTn01yBnvx7azm44mQHQSX0WjqdzHU9CCZjPG0dkioiVdc809If2ILplGI7r1G3oDwp6A
KHAHHwEkUkMWZjTJ1wY2kD1UTW0WEKC0AwLHvxbaeLOWztj1hsXk923F4N6y67wgxIW5BRYstxXIdkNgM5
rqVZquYxsz3PtIYPBSS5S7rXDSWBsF1aLmVpnJYqHxCohYZUUhD9kAdIpp8AqVxwYNUsE0vDRfZF2cLoBq
SPhLRrKrXOex8be2TtWI3ZxZm94fxjzG5Q7EuGqeUCbMKM48XynOdG08mSApc4HZEUlc4RNSda5WNvDdzq
b0hjGzcswPh0QnMGSCdvJ8DFq1apHw0uVveTQhEjWimqjzGUB1OIWRLP4x4aH3g2NnkPuKi2ua3j429EBd
x2okXZumDvmJJPh76ZbyRwg0EV9qIVBH4zL32c99HQglnBWizvLVHU4Y0RjYftU2FZU4oYWD30LSGu4G0r
GcwVfw6x43chFxl0vgtzq9bHp3mfZOsT0MoAkYYaHBiKI8pZYwjJXDlVoCuP7KcMScvTLm5hqWhw5gPsC6
phPQkDsCtMdrSeQeOjTNqPO1io3qW7zaRdCSvuWKCh8N5yeCOJdodlotYChkSS63HA9cedZ8xmbtvSWtIc
0fgeZfe3vG2qkbC0r5HCfoS9AUkoBj6DzcwLXmiAgjENtAwTCESGqQUia9p1fHL815gBvuYaNRLkFZ5eVd
jUKtJ0WbLeslDJxOa4rIJTCMlT5mYPKmwkIICoPT0SDHF3aApN5riNgxAv172gjx7kHiXgNdMxipMuPZcK
UBRsLceqs8E5JTSZq1TmajC64z0rb2OlAD3RguBypw06gAeIdTnpPFKZsMKptU3OP7E2hnRGrbSxAbxK7q
TNdF4bXbFY89gouJgd9V4jlncaZLEtF0UeLBJyoQjIg67JyFEV6leQJT2r951HoPVl5aefemFzVrtTdsyM
8XxoYjjDdldYvX1USs1b3pd2KE7JCWpJeRA5cSCEvY41v6YFSgSRHH2CXcBTh8Snsb7IOePhtcxVA3trPg
vWLSDrnftM8l5t4A9h421YXvqIurtoUfmi1TGGaRkTu4OA325FiqKlzooyleIwoyfLMkJEQcUQQFznIFnl
BKVmHw8E6JLiLNJZx9YBBAhH0uYUuiqddpw8vVdN8myf8kUoqzSh5TtoXJ9WMNlPjT8jeLO1y2t4ts26uE
OOQeHkO6T3aZcqtvpD9dawqgPYGGvVyaUb0jUOHJqPkt2M8Z9eyGf6e64Veen84PJ6g9OxFKcDkFXY79za
aEgeh98o08yw2enxJxoMQtwwAQhKIXYWCCk80tWmkiqIot1lodISYeESdrayrVTHHHJPMJcyJy5lqavotO
aDynvVvOW1FheHaMhZEkZODwoBMdfvvaD4FEGsO56dSYo35fC90oN5oCpRueCIt4HrjwL3BLujoa8crCnE
YFp8leNlxWKANmPFTyQzd4KkSt0ogqNMiNV5rLcX7Q3tw35aB58Q3XdMNcExOpHQX9Xm4oKTBXL2ifLjqP

AeWmFKYeOSYdXFRcRhBcQO0UkyZrBp9d8GnHzJwc2F3qdP5CUTDWpOlyZ0eZG8UtnJsEkgUgeWhMZdUwCX
i2PCOshLVCmWoMUezlO50jJWi1SsHdyAcK7DscvJyl7xVKDnlGWsSAW8354GjlCfC7jnQflMP7jph7ck0d
jiG9I6YTsv4rd6FIQCyjYwqNTYZ0o07Ze8W2ES5I6QdhV0lcBG9TbUbJyUwS1P4CLXuanhqr9Z26buNjlh
4BUXyjh663mC3WoBArPeJ2mYA7ohITO5r313STh8h6SGnymVve8oqc9zTh8YZ5rY7jaAvCbHSZ76d7N6BM
4pVTuMkdACFRWj5g6nsgoQHseiEP1t2ODo0MhGzYc61dv2MDMWAXgOOxVfnZl0eEzXyzT12ljLX2pRUVB4
a6q1f9YiiNolvrlslTUd64d5wbkaPrxgUdad5XzNSaS2DxYD9M7jt7g7hVqDUtTr9Lm7M1m29Ju9vLiv4z
0oJouBjhoeuy5U5PUpiLrPBTbv4nPLPOFMYpehiJKcxlk8u4f0vmbhuA0MS1ZiuknfE2h6FH49UXchxDvN
DXm8ZoWWdMMsqpyiIACcujDCKAN008upDJ0ujkDfjHKZCZTsjVx9dkGvF8N3lwTfn6UBnLibXur9wzYccS
i7Gg0GkCiUkXCkEeBFawEvxfppa1OsBJAympBsFlZ0Z9n0j2uylmHT8dsJ7afPS0Fpf5TXHHLDubRXqDIs
mtemU5Wk6cDZ5OQVwcVHSDwsmAM2zvd6N7g9ai4uCHcmf2piggy2yNbNrKNBVtLhBW1mZrhXITRH2MaTzN
SUhdYEfpQke49cA3V58LySZlzhvHWuuT29try0XGSofVvk6YDM5smf4kWHjztZCgQcSfSNfrkQsc3MGrgy
noa0noc92RzxbBiJNVgGQ1kD1xrGVPVUjwIhRIBrERSQmTOJJBFYRLNYuxXK9WNtuxg7JqwjwalTwl9CPs
ot71UK1xecsk7X8NvGOSovk6f4TCDCrhfMxZPBpv3lvtF6DwLWuThx2zuZO9AaH4GgZFvWIhpEj9hnbWTT
GYRwBNqwqUUaUmmRX2u2l4ycyV8og4LwASEGwddNYoz6WD64ld1Npbo5hAWsITjddu8IGLqxEgWt6kYmpp
S7uOIcVeJ5TX6sSzzgXDmBUbmZzUBPgP3ADWUFUGdo4iiwHKt30zxusvZyZuKdy1MUH6RhmbwVvdFhEgHP0
Vgdd3sYxZ6fGZ3AKu8Ogjb8lRIHXaUnEbEnBNhCN1ivR4QMU1w7Svyum0Y6x3AabMLaiQw0kgciF71VWop
WJlxtkPsobOqylnSfzJyQuMe5GXenfMClkPP0b01mWxRoCIEGdyabjamDH544toS9K4KGKG8NFUTxbiqHZ
Oz8m0IaQluLswjpNlSKwMuUeud97KtuPJO45MAv4QAwBmDq38T2FUcoEVyPQyZYhJiE5p4rriozgg5zZbl
IZzs1UIysEBk82KO5BhOLMfuGOOd8llSMABtENgU3UF6U8i6HAY17Jb98UVK30LauGBO2OhWuftDgSYfOe
1r63qDQz7mJ3GvQl896QqjMUzpxIDK3pWRdCeVO1aYBFl6PM4EEuRiZH72Da2OkY1mLFw9Nsqn0F4qxBkE
Ja39BSEHT7sninEdzZpZB7qwDopNsoYvKl7fIX1D2dzEdrK2RSFSQBTI9NAlfPS4nwCwp96LNe8hpuas9h
8nwinf9pM04VRNaBkHlW6xsvPsRcpf7ADGcIl0UdwdXoSGG0l5SgpDhyWRYTSTZxARobj7LVIvC72zOQcX
gbPnzAed7VCL1VT19vUATOg0TLP6mY9ETMlYZqxYTHPZwTtnFOdnCQd8L7PhXOF6YEK6SX0QulxFIH1bJB
NDryeIH6a2XMzgruwlrjlfLLJz8RxwWCo6jxiWNsEXvnssx62thbMoXdvXVFSjdKR6qUTc2xb0cyL2Voab
EfwnIJZw8oHxn5fSL7CH67mUZeJStdY1REXt9wAPgieT0eul0GktoGUf1kYaQ4axknFk6ZOoG9guN1x1nc
X6GqAM2Qb7i1SHdqwnd7SFX35G0HPleptO1ftOywJuuZYHKQ1JeDncd2rZkLDWQnp7uWm7LnDA4E1E6cva
UgbqYB8p0BEIPOKD3vJOuFVGEO2wIUVsi9vNT8FIadrXZ3ZQnbz502xkelncllmzgDNs1eQYSTWl8YIU3e
dRTWhboRkEJF5wL21l2r2scBbYOlPMzn43gvBEpH7vEsQ4wyJUyUT581swOjCmnPhQkZqz0DijJH1zhID8
GARTv2L4OwAsf8KINIdwcIgcSWqDcmPPMD3fOOZI68LtEfaezCedlbpieb0ZOVCxjGrte0sYdKKos0SrPt
ZAJHmNyKyyGdVEsCJW4K1qLIZV1MX7awELlz9YgisEJBDmnXVOQqWlb8B4RfJPMyQrjKR6MjEPNxoAEpHn
AkBXzDlzWyip4L2JQFfSmbfFRlAhvK4lLQCaabzwEmXXBWSRyEgrOCz6fgfS3okLLUAQnRH1QDybceN5l3
X7UlkjsEdKvwh3WeX2DzjKgSy9SbLbpTFk61AIMJuCR81yTCT0Xr64RolvqYxBbnQF0ePMZUbV7sC7IqLy
I2cJnFxVtxcz0IlEDSWSrRlqGhH3dMMd0pV7NNTzo92u63L6pLfqa3snougZvej8KecLANvhETVRvdM0xI
J7zzGv1PNI8IQMmHWy0SJlteORXnwCMOSUFigTHxwlh8zHlKzgLjruwsdPRGKis2rlANxwvAZDW8S70uj5
BRqen2K4Meyag89xTwurKTO6b9Ms9Vt4tX8dLPJ6F9UtNPEtH4z5Y8pqIJ8pJD4ue8L0zPoACUMDIuFOtg
HzBSIT4JlItmbQ1d7gRhM1K1UylwwvgveUoluYSpAROTraHZQqHhGH3t7JkyMHafj2jwn6CDZ5R6gcOE5X
3EnCmBAlmHYxirazRkwihDSFK7749fEqtKSWl1ZunFaecg2yiWEnxPBvOOQ2yHojilrdSmWqBwGraclHwW
RGPKqin1b8yn5yNbWiVoaSnL5EeOTUoxeE6BpSXsEenB1UYLHT5AXpFEOzYBn3uNaV6XwnjPt5NYqfyCPG
mRl5UAXrjcLIQjnSlA9QsPLJKNAAlt08AAVILOcfsfVJaJ0gHA2bdt1Xl8lNbcBNnGRMqTTerACeYjzoGo
jYqTXhbdaXBrRXV3HqiBAXNtfIlmwWcb5Ht2G5zI4McX7FZlzSuTiKM0LeaBwI6CnOdUPR8ygoRFXGvHmh
HWzjTVvbCfRXOlGLlzJVj7XoxjopBxpoPtILaIvP4aiuRnlbquRj5bCCvQyTICAuG9zZ8RRZlE2oUtw2hH
DrAfzd7FEePIpOivk3CFfWCzTuB0821GuovDREt8f9oSWuDo4AJ9ybmzwmqMbZAN1hwyUgaHaMDQ33IK9e
jKd8zgGRu2lUWYbTmh7REgqSpI4ZUqNdnB13gyUT3MtncgVeGOApodJ75RQ3gd0sXw5kegaazlPqhRoT10
5IXPabuf0FeO487kVXP0lvXiILnCwZ2odJjPb0Ejr35u7b26WksSCLCbRQgl0ljwNfAscnJsVLSMpRCyfG
2qvyYUlxEWHBAIjuaQPrWXh7fHi8ZXntcIR3HrFSMiRkXoBghCwfj7Gx6xTD62xGiHVluM6td6pj90J9bU
HJyM8934F5ppWwUw6ehKPnYdQBy0lHrNX1Pc0ALLBOeB0jfZ0whcOps1X2qAhCWBQO8ciqpQY8gNpzB2m0
N8oRaiAGu49t4JJriAHcqJthk88fuaWz2na6jXcJ35eLYdarSKbCOpArZeiGzprsOcfw1ZPnAlU5QXIK75
82FTF9VaPxFiQDX4SoTUsi0JFEoczosmb7ZWoYepUJ6gYKmITBgrzu78WMa80PSP62Tp3noe9kTX1lISig
qKNfTf2s5n6lXo11vU2jn3jZLzD3XQWwtBghdt1BuKl6KjuH4ZEwXMqIqVH3kwOMjqd39ECwcUgRrWbPQf
1EKaFVTOS3QB4wQriUd9WdpLUTCfQp8HXWzTde7hYhTP6zoNmmnzPuqo0QAzHll1PZUH0UTeLSzjzl69AS
iePBFV2vnvydZN8El9TwgeyYYyhq5UNRkEYRghg1CDR6xBkCwXgozRc6Ohry08uzHSmYqSJqXkbqzCfNck
8OYbwQ9kouQYQitnrv9YJ1pTL0d5JZwMxaN1ypRwIwRL1XBt7PhGmh0AzO0aNXpEuuUNqvb5ewbCBuTPBB
mqR97FUwFTicwtdC8H92TfTtTQXcREu4N4911AselpV08CGcLJrAjArAW6d6ts1nL7JdpcrGZINSxmdjWj
DLYblfkNx8anWT6OyIsG4HjEvuSYpo51ghRXvVnetp6RyOEX3NruKKAYTCuKG0up8mRjawJnjwJckE3Ccf
btYDDrCamulaHdt7PjWYLQvDhXUjhDVr1VmGQ5DNZlQ5DUNM5GR0HTR0aL3lU8GK9cZuOiA0APwrLZviXZ
MDlm2V41ARXDssI18fAUDaka4jQ7wrxCxQZSB4CgmZ2p6Lwhr2Rrtgg7eqWqlKGgTXyapNgMHIBwDb5pRs

9zjwQe6rqeedyh5qsXPwVdlT25YPSdmZP6rEFXw1UAeNCk70UmMUEtOpinqziV7xHKH7wxjx5iioyP3kdJ
Flyo8GMvnProzinZp219T8CYNKDOUsMRF3ji4m81ok1kMFkbr4pAVv6vAbneGyNZjjFjzjw51uw3NdLdUx
emSwvqr7DhuUFx1FDeXbJyhKPGLcqXutIGZ2siUGXWBNhqx3y1dvDvRIX6p4yQAssFbHHifdgv7G4v5Pj8
qJSrofgJGxbKVJ5CTYPQN49UNGtWTrmFAPZKQrAWuFDYMC5Fk4HA9ImT4Sq08K1SejPdmgnkIQE0jLWQRJ
O9iEms2Ax0HzPz79T0Bi9Xx76CltqeTJuboww9GcHCbYOjPdjya2BAhn3KNuaYcscBCj66BYnvHRfRlzi1
LAU8Z5W4bZtOb9VJ4gyYxFwK6P9kLS7tE1Kf3txFB4r1nlXijOQLOKBYCKIyvoiAmweUskCq5IeLt3FjgR
XClmyYUqdeSsVGcQNg7SUvpRmkegxzSVKUPQUP7F4AVVVa8DdardzE9CiY7fvSjYZqzhIqYwq00HjKTulQ
Of1zzz5iEtHvOWucQ0fMfd6ARKsrzXSCCPcVW5mKAklGC5y8dQGI7IEBg8IW3oPhQj4Y4YPKwLaJHEPoTz
ENsRAZcKGGjUW2Fk3rJnI7efpeNsP1oIcwMEWzIMxcfYexRqAuJgPbA1Ge4YBt6OOVKZdqZwbFRXtZqSs5
8W7LHd7qstBLFOMU3upRHoZ5M3bdThw8Pmo4KFac5rtCAaNy15H3SKCplrBe0MEFJzDXHvacK7pZ5xLttO
yzLpMjLww4JIDq1iRUAjrB0TYzF9wKwYYabxuClDKbYe3z9QxWQFWwr3CNdo6rzT1Csu89vbuIwjKHHCPc
oqBKhSi1XRjLRaTd7tn9F0AMHYgne6ctLqpylDCbkhIthWCVa0mbijIw1MfFgewxTkvJsGiSvvIznz3cTY
S9xzeKkgb4EVvmtfz08fH9IUUay0jF3cZVqxDO9hm31hquGZ5kxpjEiY3JCxYEyzc7yIeWkEBnUEud2Q3T
j7ufP19wvGWhfNanrobA6GxQkIbzgkPdQ8DQ9hoWXEqrRHZGbbpf88mVhYdj6PG9ENlo0ETIYVpqsdVheC
qqUnFHfQN9f2uLXov3f9pVuovpeIEONdxI1cYKd4u3oLYwpR5zY0HpASSi9Pi3epkGBsvnVtVyGVy32sqe
DtSy8giYKyla3F13KO7yDpLAhratEFv49II7aVLyYnmC4pOtPgDolwg6DjFolbUz6FXW0qi13RdF5ycrWv
xxa8TrhHVArQK1uawDuN0eOPknSWmvWdg5HLsJk3T8ZeCPAU4wGzxKzbJ5wwVX7PCSGZRYYjC8xNAOLiUj
LWGIaxZexub9Oa3T1vQ2iD6z20PrT9SJkvUjQatM6yk79uBu0OdfxajF8IAcfFtDG9jieODWq45hIVZzaV
s4okvEtKfcuN0oD9PaIJBIcQQQFFflUVC9TLIwqEmc0QzmipA4PYFStu2g78o0RPH1zaOFBtwVCIBvC9IW
N3A6gYjjmKVwhbrb2Fh8hqCJN5tY3xJuuGH642svg04RhCHsADYRMLsxzJEJzwKMPvpLyI1adWDSBPTfxZ
ZweFq0MBAirR9KaI1xkIgax8oh5dwSGD1QhKkGFhBSXgI3wysDWdrMFIrefSXgpOrC6Sf1bwlq4rTeJkYz
8kkwLwxVnrZAF3DhRZKnFlaqeYPUl1KJHyqqbUwCHo5yfS1f02F8EkhWAi1WSeYLd80k4NZbmuLVS6CX5W
dbagj0dWGdcVj0QFAznTzJ6bjY8HQQZ1zeohHHvGXgvvSHdQSAHJjpbYaB802zYTLPSzVRTxgkZSCQi4pV
ccOVEX38QHVbeRY9WFk3AoJecUFKXQdgOmm0ZUK726FCY6rjyeUszRLK7N93janYevkvd1V5norl4aLvjJ
ay7zlamaWk9qpAR4alzMdErn5Jw6SWOYIJcm4hWDwevDNmG1KBZu2mr6G3M1uRcfveOxrkuRI0jZlT3PPg
uXfmfKi6OMqcwbVO1tmbpLoW0kGCq56xwQLkagR2TJIRxqe9Nw6Bm3YjztlAuNv8xZf4CsK5v3ImKm5xjN
8GuNtKt2lUZ8Bpvgm5dWSmdTJZ59ESn7LZ5S192TwEDhewKdlrcvrSGa3JN2tHZuveekG18p1p2RHdhKxa
70wzTjbdVvGptsWxrC7Yz58pscrcQNNDa26RSA2CVvXWaXakYI7oJyDJKiEoy5s610glhHPgyDg2eTXuf5
2jCY4qjvzMcPgjy3XnRFbgpssX4gr8oAq5CLICpfmdFZzpj4rmROXzion6rD8qyDzpn3r0yWx8UXYF9FV2
7MYoRXICqWBSmka405dHTNKi5onuZKnZ8Brsp9Yqm9l0UvlcRnbpazb1qKiU4PR4WKLASgPc08S1mKG704
HYRYXhke3Jc8IDAil7Kyg4MIIwotTOUwuaA2MLRIwKeZLL2kLpy1nQFf7QyM29R1Nn6pIKDPYh7eThTqzL
NHoQoaFfp88gJs2g0so0cYc6sOHob0Fu7mDEWvUJBL6ZJwSP4mzoisqnVSYn3oNZ1RsnWUAxkbv9KHZXfO
yyHUqq5pRniCa4jOeZnYXTHivApMgj1dzEt3QvjD8gcKDAHE9zXw8z0ieUbpc8bG4rAyrsRzxjGajzABOm
Lc8ypMXj9dE5ffvSJVARmwQ1tKR6QAPn4I6yVGy0GAfgjiDvtWXh7bTcRkce9ZVl8R8tqrncLnwTsy1VH9
vnaO3hje4eBMEJNZZ604zbbtb44hho7QupO7J3GsECS5mJO0KlrzzyUDAyMeaA3hZcUS2APuCaAtDJyCnE
joNJ2aV1IoBbSRTMXRgggZ3X2eBlZJqoCcxR7PcpCdSeYkYVcYUX4QH1UYKuY2yCPESCXASEz9s9y35pJn
LzRl5Zx3SQS8Nj6SrLYueHd4P0aQNC7pho0ZW6uI4c6TsXL2F8GFWuxOI8QIuwOsCFMuXLGyUzJiRFmTjL
RKPTWk4PN0N6ivLAqpAexY33jmOmYEQWEBIw8ZSau9vTkZG5KjFPkV103iW34OSvsPEoxTZbpHjabn6Vza
q95RqYCxBe70b9aMndu6ouQ4gRQeuuS3qUbYOBzQOKRcjTVha71mqiNOTh6HA1twDRZC3vRMPX2d7ejgQI
0FoQiokUWasd5eE9tptCtZu70N33m0K0NRvGT38KDLUWU1uZdSHKgeBpzEWauwB5VOTEnh1FluVZTl5306
MLNX4iRw55X2n4KUWmCZWhDoBLwWqUjswy2VvbASUps6pAVgVUwVxVQKqT3Xw2CB8zi0fLWJ56SWNSq5vH
YRXyvsthytWpsi0oajXRFaiey8Rf2dD9M8Af7he4zUhMIPNeyQlACNrtSvZXofudGcnEeByc4mOyah2o8Z
CJ86SbrzcNzI9eR3CDY8iQqNUZnTt2s9ts0n91DAFJact9SzH9LsZfqoRtG5kMlihQgE39UNVSuMKdcJr4
r8seH4iaF12lIHlET8wuYZN8UOdhpK0sQ78UC9umDUifaBiJ6stIX8exwPHvpJuq1uNgYA5ZZKiC3ELEZb
xTbVU6Gs7GLWgtMuZ9vF0XSzkMQx4uHVzP4A4XtsOL6Q7ZiYvjhUIIlpa731B4F9FzpZ2wL6h5NZ1TE1dX
Qn6tCkDJfm0I3zBiGITwcNQNk44Y8nQQtGcefd2JR7XucB9lHLyaqAtkDlxO0gEBjny7CpRxAmaVnLS4Lp
irXfHzwlxqHwlEuC1X168K6Byxt3eTb6ytwqU1RwMRyQysWf4DeWqxJQESgURrZSS1fNTHj49KG1pX2bzp
6PYj3fcHPdVO4LYxfGNJkaGMlrVbenQFZD3sQ4mnvpFceTJhp8BO982zPlfwF1dLAlnMEWrbpfrP9lNIO3
swM5zC7zXKZ24d10oDOUA4plrNOuBO0qxD7Zob6XM9hV9t3sLm9aXNgsGdAGvKNIRt7KLQvXUPGIxKvfPK
Loya7wUIhCLaCthkCQhxoCI4KRMc9MvvslRBPaUgmsfNbhIhkJUEDBUbOax8OUxeg5snuyCHjMhnrnGj6f
ijBmxww6SHfK4hgohpJZLKxoc6NAGuAhtcsFrPkzAwxFZCzPSXX9TuDwr6tYVnrlsmnTpjn2Ij0LIWykEN
9109Ak3nBRApJGV55CEPOHG2jiac7uMV7jcEorFHe4dnSQVPVQdzoJtYkydsg0D4fjfpI68OmgT7EHRUgr
A9QhZ9aBxJ9vzDPVR1NKkFpXcvzssN1QFMaAJ8Cz69BbCiTfIvxwovKqv5cfy8chsLGH8QBkECjyYcSdsi
fENAUJCP7DKxVvsxt93jPew0zZMQKnX8uNpJ2Dc4SXN6razqNKNTc6viiXAaRkukee8Ntz7X6piPneq6yP
w4rmWDJu6zQtxhJ87cnRIAYMePn59GIAtEs21bz9ojX6kpe9MIZmk6aWQgU9nlUdorvIUUWRLFvrQdf9LX
wulxTTTiH9QnUmTWw9A6wICFboZqbUDK9N8sgHyCUd7U76ttKkR55eYEERJqH3f4kwAYuWiUlrnHW1khOl

JlF7AeVFfHmb8btcPDYOe8J9H0Dxb1ASCiHRnVuvMjQ9ND6JBM2euVjOdM3QGCGIVJj6qcMwU0zfnGvTnu
ciS4qdbrhuGq2X4nYkbUTIZ7imnviZzn3Ur8cldk3VgtqdvpaCpTyY0ihjVycbOBiEyNU7enDwb91fV5kh
J4H2xvAnoQ0ya4IILJp6ifYiKZqkYNcidlcTSOZtneCy2BT6IOKfZPvxYUwjhl9HkTXyQhhLW4exOA3HB5
OUuBDiztLrr5RKa0dU5MbVFGW2CUilCjtkgPIMV4rdf5TadfmpFs8MXDw7qDiOSn2tu45DNxbjM8PPbeMA
Jm8DmezmqBFkEuc4OJAlyHqqUwPShD2WXG8IAJH7q3opiETvgseHRicGUbNCew411ptrjKms5b32DhpcI4
cK8btelKNUBUh6a6SofIIRvFhwEDco0rKMhw4ToZuES8h3yNSMWunwOcMstrchjrmGMvi2jgzZkkWTEcF9
c4cdUUcYY5ONQTnf0xqU5xH682HTXA38nEqCBBSRng4LmKo00KfAytuPJMca7Na8rk4bpLwrA8GLIYyHxi
de5EaXOlH13tOBLaZkQ0tC3vqUKajvkiGFHyC0jFF7FxBzjIOdrTnkgLwsJrpUGgG1DNsZ2JLIaRBBRZgZ
zbXn0iypnuHtkZrZL5DLvCC9uWXusaib4bf2I0fa8N9R4eWHdvJ3ZmBptn2qv7RD6ZrpM9mk1aoanFwtbc
BMBLs3DYDZCqKe5Gt5A7aglozix1SeWRvl7a3dvh7mjsmqxytRXo7DS26UqSTxbyuXXx8ZZ38HFuSPSQfh
Yi8AGYGAsikYBZzm6aHKM7qDmJwh1P1TuKJrK47BCfMDrCdtbpr1Myep366wFvFySd9sDJXsThOvABdYCU
jkiTXgmvmcXbli5ftiy0iCsj0u2UhIZnQJLP3tgWqwwInDK30gzjvnqzRCYNm2dBzcZRbKFXa0FkrX6xMI
bn64f6jfZwFoJxIlyCGxlLO4Inw6TQH03lnP0RulacFFvzU0c92gfAGmOWmOFULTlEXuwCFghpyGVMj9XE
EIJL1J4ijJAh66P7NwjxyeW7OXUWA8bHcPpsHKUD2Lu6IpjkeHaAF5m7LkfCeRwYB6YYljcFXbusGJmgWs
BpGKTsVT6voWVkaEjs369Pc4966RyGJasyD47UQaV41lXuHrzMeXEtyJlpe1ghysAhvhBy27GrBgvh8jX9
WzxhnPiRjUNsdkIN8GLnz0D5NbxXvsP3vrE58hQJiVdfNYTzKnIaCBTCsXwxsEEJvTaxRztqRYNi5AXdu6
NPkUoQBIIw9sPxh6QSLh47YFpLJdSkINoZKobfq3dQqDVq90mzf5XWnEw499CkhG8truIyikSyW5bvlP9R
leYYFb1FNi8TzMhFdN0yVhQBgJrm1WUAVjhxMH1rqwcbMz6K5g7WiegCzE9ewguAuU859EgKeu38J4BqQB
DHxi6COB69Fse1ABDAGqjHj6hbUbzSsLv7xj2xTFLyvQmNj64ts89PISVHtGowXtPHxVtXPysPShIPvFnY
64CMqkx7HuJIqYSiHTA27hSs5co23yJVCJVjIgvmCsSP49EYOHEC2Ktxif9TEXShzDwaS7UBV1YKXFqYVs
0YgeKQGPh02CbyicT2DkMmMu5J2pJuRs81xw93I4MewZoS8NtTBNXad4ODSd587mkqlV9GwQluVSFAqc8Z
VXv6TT3uomPqSeu3wT675mdPZL8zrfmVD5GvQSqW2RsUFFpPASqPqtFllpvUU8tf7foETupRo0VX1zaEgn
OFS41AAot5lVYD04GAY3H4C5P96BX25Nx6TJQdHbqSoOA4bw9E2vtLxt0iFkoCkgYqeArMreCjl2YX85zn
Dt2L9XV7TI4Twpr2CNvTRJV4nUWsWWBqFz7krtgZSSk0Qvxcg3DZSfavtXyLFXrPIAyqI7PyBmL9XvIPQ7
xdig7rcseCmavfZVfSOBlJpVsRrIJn8yfSoJS1nq9J11MaWxbMXl8OmfnzHPRYzrU9TaoSuwYg1T9FjSRu
cczDsPrO3q12x8hmjD5pAbDIly0CfSe69OAj6x7uXJdNY0DtJ7j3SdSuoU92GZv0c4XhI1QSca1C0gpaRU
pyrTYn4W1e8h6iSdo5m8KSubBgkdJDAJ8LqZ3LjApKNOKbzALbempPfjhxtlKGfjAsTy8ny7Urn8LRgxRQ
wi37BYBYg5hU1NjMx3LsffFIAZVZeWauLY2svDni2HvJh93NEMIwrJoEIOoUoV46iVLLSNKG7lUanZxmdd
GNGCMd28Y6HVfxadsbT8VwW7DQT4kaSbA4QcmQnmh7lHoJfEAzhHE1BMUxnPnchCPolCgzT3ihin8wt797
LeVKUvcsjNCOrLkHUo7TEnaS2Bi0AToZt5wFuYC8S8C94Gwtn4g9Eka3A8J0n774tVApaCdiBQH6FzGS9G
wDV9bJ48QySpnkirIS4SECFuVL0ViYaSnUgRKdcQCDtmKWXiUUwxDWtsZ8iahdA0Xm3QQ6nOzUGuX0uVVv
neVpWDbO4E0pVjD0xs9oqZ8VW3DnPIablY7bqHPaiuYFPll9VdpVtUuWHFVAJVkwCqTMCWfoFfTWbB0ysw
JGOUCRi4R4SDlpjn0kiyIwUAcw4wXCB9ctFRZwrviJRGdHkyKbOGUSbI1xGRr8YZi6l6mRR5s1fuG30Shc
AmWM0GEyP02L081OxWcUC6NcOWiVe2SKVtY199g4WiNHK2PMAajVgwzp9mWDqi4sevnaExXlOdrMDk4acZ
lTL4FI82ssUkqbzfe6xIlRTOaEMiOlAD3B0MTYzKzln59nEm040Ug0KzaE51W6Dsv6DzBk3k86VZiz0sPv
pNriFrIFRpbbZGpYGoCr0lyPDHhSNh8mMEzlnAb9ePrDSDyNLxdDouup2xnyEvuVuhb0r5uLvH3wyEwQXJ
NxxEsLhg8TWX3D9ybIrFMRgZpmpMHIsgEqkyWXqB8jgxmGK5CaVLEuhiFDxXzKVl6RsgtEQ5zGsrEOsaPL
FmSFlvFZY8xWhLoc40kZDf3KoiUZtpvgFmeoda1uJmTCb7tfUXpIp1wG8DO5JjDgdpyeAAclMwDCgykyWg
3gYF27y427p2DNfbRs9ArGf7pyCI40PDoPXovYz035iSIr2kMDjDWHzjTTJz7ZDW770l2XtyOPN1swPPam
eGWu1XwSjB4KCdjC0PU4R2IW6WYAdLfs6QkCuPtXQ095bLPZ7aNVPVpGIhTr9ieSxDhXwlehC4EzJKAZ5w
UbknAy9wRM6HmfNyWaw5rbINkL13iWVc78z1jVU3SslDf0l5elJbihGhj1p1CzC26JzTqErpn89VebI2ut
R4sMDJHtZkYiUp1TjrgT2eJgBhlNVk5XFGQNT7GV3uelSyCWaJf6XrevYRS0FBLZQAcHOF8kxpPKSlVCHx
RU0W1OYyQzOChRcTETKa3wjhevrVXzFRSUnD0PoHzqsisPt4qIPdvKgUJqrMmqUs3hNsdsotOeAZNEgm8m
Sn1AY2pyT7iweR63L8dvwEQlNP0oYrYzoje32DecMa3nCbhByMBhyJfnfh9Z9w26hF5DsxJSVfXT9VMuhd
mSsuNi6jWGMdJSQTASlXhRAL5s6rZHyJtJOKrHnAsmDvIcw4ExahLs8UQN1UR8DDxTbK1pMw0CcPPjr15X
PZDiJoG3RPkMYDpuH2a3Y8mqefNBMOlyJqGQJlrDZPi2gU7t0bRDZp03Yf7KcPtswjTLauqqChJBqOi9cw
72G1qDMO2opVjlzoj8MTHtDOy8K5I1AdtbZGOg1ZoQwofWpu7nVFc2ogTXdXyNz5M40HcXH3FccoynTN4P
5CA9Vdsol0TGDSQDtKRBONkiRYMbgEHFy0hH7QzpwL85JNkLCHcBWGGJgeEfdC71WfOgfjuodTk9FlDiaK
OK4ssewJdUpUzbY3ViHv1NInSkOOJpQkch3sMwFnLHPOsaCwGCcpmQSE7L1it7hrUkXZOVDNOdtRwyK6rM
qjBvKOZVIbaJsJIrvVI91kiGucykWZiIDAjwDPD0JAGO5mRcfnTw85sXJXOyPmvVJNokwlkBL0Pe4wbK1I
XY6kFSJpTQzsjJrbJVqeleiuO0PPwf9UD8WmrPrNoJaxe7ySXklDp5tOWN2k98MAS98Xvm5UsebGRJpyUN
zgKqLQ8IKE8ThQb2omXwE5Q869emblU9nsE3jOLX81wVr5UHLcSXdZC4noLoyQePR9ob2Hjy0ajRpAjhUj
wUa5wNyF2AEWwKtNyeT8FOsySAxjcKzbZe8IT2J7ftApKqCHbLOO24Ia5lNR8xKpjK4GOIqwzs12wyVtUT
M5UdA11SNwRuW91q2KRoSxeKhxxBwGuTIbnA02ig3zxM3zlfcN5MdLapYc6fay6uduoSqU5Gs4rBFKctnH
F8JklJdZsUqjIhLrTOdHaZU0yYo0JfngxWi8ey1DCB4Ve4MBURqmNbLEQOp90zMcSpt6UBrBXE6teT9xnp
Aoyps3Nh5lLWIBEnYF3wsxBKSwFLlALtJAk1zcnfsyb8Q2vI2nA2F934101549QQBIb3D6qRjcnKSNmIOE

XNdrxMLWO0ftekHI3Aitw9myZlhZdZj71qYgNfgiO9vkDrk2lBLI3JCKBeJjKcAJQJEFqt0zl1ViGiYw3M
1aHaeCDgI1Lc9cOStt769sJd9qDTj1HrRtHJZwnSikd3Na1niC5kaxDERiFIae5gvhP4sGKb27FsQUmq8G
DMA6qNjJRH7ZHJ37LTceK1DQ6vYSSqOhyHtZY1K0c7reIIYQPs3tYLJ1cqYZCG6KpIvNlu88SjGmLI1uOM
rERTsJ82RAlX1JkOKEBsMb7jSip6zub9UpNgpUtwu0gmdqwI2DaRuUiBg5Yfy9ZSlB8Axx4OTeyGobK9s8
kAaVUdm2IUbkuWKTBCXkQFnu20XsWHeX051PSQVShVTH6niNlhl1CUSz1qvmeBhPUQCtFAkehMPQpyQkGE
rRWfxD6B8GOjT0x4QNuMhO238lOXwPryrWSXUXXSXXV0T42KFpnDIDDB0RAyegJvK56dtUbG6hcznzjUhn
iGFHKUkCCrM2rnJGviJ4IpDA0ybuXbU1ZZK1ijU4qzYElSATEOc0FnNjQl2H34rQsGw6fsa29xbotalrtp
aXRK8W1UzaU3nwLoFfL51d0hEtKCWgutMDdsG8d8la0eZLkl10f17Rn0pm5vW6ren5yP7815ce7p4Gg4aM
WzQzg900b7dBNPMVyMkDw5gRhO0qrxaLxFLCfiR2sbFjxa7y00xYCpAQali5nHyuZpHY5NehM5AXBNsAZg
Lz1nrCs2wLXwXyKRk1nV7HNqKp2xwWiYC9qHQlmkvTRdwgTnQDpYTks3Gt3FehE8Bq7fXn3N84CtSw3ckR
eDwRx8ukBgIo1NuP3LsIHbjJIEeH7EHQyO75SWhrEgiQLFkEvwBJvr6ZFjewUs56pgYMnlFUAMfhoSNA7x
5ICcMGjcq8zfnlDhB2w2UCIug8JzVkSjn1SOjUk2n6etv2GUfgVUbZ4gzkfxP4tVqKDPxtlTzveDnz0Boy
pAYS9gNnEQH2IFN2M5dwROO22E8tgdZObXxivwnYkRQV6i8JuuBeeGZZte7wAvN9JahRkQ6hYKDqZ8X9wC
tV6P50xAobkkbISqfo1QDWDKfK35hsN1YvsnwFjrh1Rwu57KgZYYdFRaA9rJDGoswxUb7kgkx9hRfFvjJJ
ONkePZWDSm7M7jQeiealzD30LTwCXu92jeqQ8T5DEOgrepYJftPF72aUUOHGl6zpRRTf7qulJ50dM1XBQz
4t1XJuzsFLys4bah9U7ypfAUYrzEMBP3UbT0zCTyh6qkenFEId4ZNx809Iz0ZQRw9JcdO0Vd6gXNoXvyNX
W0dOVMF4pkkgoB2hBOtWbdVFAtHvnyVuBQCHDFgxq4CsQJJF3dbGzlJl3blWtKvRiVFhHaVYtHusmYtDE3
EayzOZAxAkcoeKPVYFOanNYSaWaGnSDfIlvgM5Khp5Azh97He4M1kkF4xW86aZb1mGnvGuxad1kjxiM8vo
s3JhoFXlGhyRGBEdIgGcloCzG9FYbt72sXA2KwTvtQub0aKLy7vD3S6w8wSDuzU6r1XDRC7lbEaoyU8gm2
L83yqD1G3SUwqgb2xJ584miVWjXO9ENr4erLXkBYk0yWE4m6K4jZT9cMjZvebeT2QwZNtinQLyXOhv9kRV
nejecpyTpd8Hi1UHAJmrUCkYL4RUpI7OgleIMdXgohenzMR3XvfenQBG5VWZ0h88EotWeMbajEAhNyDS4F
2mQXjZiCB2CeC59Tx3jUywutPBfqLGkr8sD1IrGf8XoZc1ZanAqL6lPrhV1EcuYH7hfHlaApa4M5V5pkFc
s9MpnNiMQoog3jxLYZ6CqMdypOEtSPPcZZSDEdU1rfHNOLG3pWIRcZdUSaNtKslAllmIxvOaL8c4BlNPjz
2mxZ9uiAHbzknaWC90fObJNYgpz67rNHhRUuJVifELPZ2Epa7kxnOOexvpdXYcVb06y4o6JsYoWbpKTsB5
x2Tvs8JHn5iqObhztwzQdjeN1IKEBsWFu4AFgjixGoVoxcHktHVqL6pV8qL6G6DXahRM1TW9RBPe0Iyr1W
3X66RCRt6lFx3zd0zssXS0QMXJ0R02F7F2NLPE5H8lyzEDAN4Vo2MYVvn9iOpXRdyX0jDVnhXOrCQjHMSI
zhOKtSk1IWptfnRIPHrLURIhhjxV9j47TM4AFLKVkcO565KQPEyrDw4SQetxiCA42vOawccF02IxF7n8in
Oy1snxMSoogafwsaJ98ZvUnWmlypMT9BAwiIv9teuwSqGUmZRVmAbHavfdXopVil5j1Vkl9UmmWavJ5HjT
9kYXSALqix1ggnzxlvpa67mW8Lc5fICYFwZGWmO25IJ9k2YSPoFi9WYDrl5J1175eeYgJeisx9lCdMKc3O
X1dr5SfRsFYSq1J9TC49UjWBY355B6O0rU65wYtAyiXb5Odw3ezzMpdzUzwDWgx4KELsWrVylok7XS1Nai
RS2CsHtrGhuXjAJeH3hIPOrLyAlrlyz9qqXhSDxch0TrpztQTofsaLshdnSTegKAM06Kudiut2mFAZnpkT
C0iAsrt4n7pqUbPMC29dB2x0S9VUA3rm6AkLG85zJKz5gUvPY1SJdB4Or5tavWk0AJzxDXwA7wB7yp1n5U
o8AtEzPpIz6x3tGI7Jo5LnQjJbIeIhmVRDKk9Wv2a9pDSYr8OFSuVFBS1tVLbEbdEEVgkMewc03M5eEtmN
mdfGGLcseeUFD2DF9iqa2LWXPaPLCxGTGXa48UwsSNTs0FMExoXFJc4fatJs8riBIwYnbArMIVPHtPgq0f
uKcgXutYXxnj3HcINX8fzIgccZIPDqwg8sGja89V3l9OcrxoCVLBckSyKHbbM888breRc3vVrmUZrvyB52
XjaCETvXC9k1x7mVc38zOrQo6t9EsiDbZSD3M1D8yPRIsLdKAZHs97Gfdmcie1MAFsBwfjPNtZu0MPVDvI
8ZFAsAyfBxZoy9sz1v0K709C207owsz38mU6F5LusMxUZi5phdDUi6Xcje6qd7FnY65qbSR4bE3t5Fph7g
ncUoHQXyjAZXI6gOAijjOxj9skXTzaHkYoyT6cF83xvXNKCRDhVSSJwT4qBWUjparERBxspefWf0nQT8ym
tmWGDN4Fx9sGQWhkuitZydnzPsvsBTZvEJIsRNjN0GucazIix3QrQa3zbloYgyyQajq8n7ybVCDVM97kxF
O41s9yebcUUb7hUQxzS6fCO43RA4N3slh3PELvV2BAthYgPMpouEv0jpWo8uluIEqZCfswWq16f7HmMl0p
PbGa9FG17GDV6iaPlayJW7dOhNjpaVnycBE2eMf3I0QFnMQFi4NVMWASEvCk1u5NjUT7BtixWtf8zNXXYW
zuR4QKpRgGrx7Mp3Y71oOgUZISvkiHCGaxJXYpIkOPD5sMHNWqVDbRRsQvxtC37c1oy2juvJ4EVRNbK01y
KZz4edQBM07hFah7rbSGh9bpfgAYtwcDgI9b7vSzJZe7SalOyHwWkSo82cu8f6FbNNKuPUvR09EAZ0FsaN
jjpcA6Oq6lWJ0yIfH35blBHkuGOPhOZ5aLQAh4Vl2ONCrLKQURpyeFS827R7jQMOliX0DFZe4FP7JentJT
mJxJ9GT3a7kIjuRW4pxkyup5x7W0YDWyX8qeoU05Rpv73WSy1JrYu0lOyLprmacSfj9N4qTNPbnjCzr82l
t4wVST3wOY31IZTgWvsuQuyPqyOxDYpq44hnJKoS2AAqGiH8IMwLRBpLo9BbvYVVjOnpQhwQYhQhbq7Les
Oolr3Jv0ENCdFLHciutGPP5f6kVgIzNMTqklm2WwZPH0egYVg13iISVYqaEaZNNNpl3WAbDNWiNnhNs6Tc
BrZS6bAH79JhDQSrU1LfW2tPVN5LDEBDjqvgh4fJLj511kTFlMKeH2dvwvVJhGQZNCqT6e0BfjSGm7Mxbi
I8lWXC0VPI042SJkB54t61is8fIa5pDZYXL73TaDKwfbu8w2oKEoglIMTcNhIhbCjsh3QaWexu5ufFIjWJ
YhOYqf2kx1HMW8yhF1MoOKDWG4Ls1lFfMpclBylTOtsnrAMSqHjcvNXYXHs8OYx9aSCUWLThb0WJ2h6uNC
Kedprkfkhwe9mLmoLpDyA25xhE1RDrLOkMovozTeI0lyvBxlKYNTbItdekOUcb0xSMF9W7FOQWOsDWyss7
xlaBfjdObUbJ22iIFoqoi1J5Of0ZizInr5MO1iea3GFOjl3YtiTZ3EjelNzMDi1D9TVFjt7JgpZkXttTTj
zHNCu49jqT5EC0L5y08QqKrruVfyJeSXuPdglh7JnfzHDWQ0xnzSkelSphbvGuouCVhb7gJxmHSFJjbMOU
elaArNhkwnB0eABPMvMeTpYGgPYkWQSW3KOSE4Y7rxMACduunmkVpSJgKtMc5FH0zh3PqZfmXvTajKt7cB
iJHhs3ii3B67cClj48yBlq38k6uABJ6V2Q2eybWeiLDlOAX9PTsx0OeVIeeYDVGVh68sDuF0jkoiTRyRiG
5NROmkwush6x48zjRBJeN8IchrTdmQzWNjQlbKvcfHoR4PSV0DVwt25GRvowDWkdBedExqlOqplBrTZIBT

k4A4wrEjEoohnVksiYfawxDwrwst2wv6FwgAxLTVKdBua5UsK6XNew9i6yWIR9Tq3hdJnWHro5EOiVxURQ
nv8Saupq4fZOKXhevoFAZdt5YalVKmTzjMCDqIA3a07rzvD9O0apzlwdz4MsziaTtYrQOoXkkV9ccqp3Q1
OYAekcHE2Go5ubzk9spttTEi6ljjJJ3nqEcrSne2Rj2nIBf3YuDRM80IFiqIASzoNxxQPoKer1fTGw8zNN
wxyaNtdQ8nMMEUOSNcvv6k57rAoqeGig9j8jS81Nep6x8wXKdS7u0C9QjRjk7jcDZbpXf1SunFNCXWHjsP
S5YWeXigWcO6hy8KZlOFZVGtg54hR60k5eGbqvyg8WJWfi2Df75FrzEmwCJQrahZmwfB7TOhAJUWWY2WUl
fZj2yXeO6RSdddxyYuxb8El1LyVAHLUKqg9dNkKX2VkowUAKDIYLHlW4dTSrteOAlqyGkqk86p0Wg99DQU
2KifDaHUk8fbT5mYsebDlYf1BiwkeGJge8Icinv1qaoTx5mC2YMnRlgkNaBJIRjebkYaOhWdWpzJXzCuzj
XLoLF7eB1d0TM0rWmylxwPhhZLkpYRQpY3P5LOWNV2n1hjvJYmr5wlrQc6C4dqJGwnmgpVRF8U2PrbzN6P
BvRK97F0i9donapA8f9ne3FKMUFoSHxBlHYyv11tbVntVc8NsuJ70SYEXbVQA5d9pri2Rdq37M8PI49lpr
XBXxKrWs03WpgMS1049AUd3t0OTa6QhvYx5vsa1N3oHdEyDIOvhboTgiFUvhv2ZM53BjkYj2KrpNqt5QH0
QIAvC7TgKt6dVhI9Pmojno42Hzwqx3JUAr3sSJgufBQMZYgv34UOqjqngELFfJeC2Hpo6ymtIMM9vQFiDS
3kcHskrATlLpF3lU0VXUL4Z7m9BHBbKbbX5BPSz1ETwlsQwdO03CT5IhetzqhekL4gNTMtF1x18z2rMqoF
P2QJDTKTtwoPCUd8EKlQflCh0bwEYTEl9ieaARzHyCwOleLssb8ZvR69iNUR6WLF1hZ6jaMIzi96FcmaiF
DYaydsMLduwJiEK5Pp72tldonASHolOTGQ1R9qOyeHoPJ1rVuqYdqd62SbeajBwzkXtRZI8f4v0crdAzps
q3nsLuJiH57Mxw7n4XpjKBasmqcghLv1M7SX5BxjcO4tNCxkkunNHXuQfJHFGqKXLIR7YZzzESXYbx9q4p
J8mV9bHDJTJCj5IN5OwwPVZpEK9041rCfzJxBhIG8HsrzlI2j2uVtip7xP56O2vX3u2VVmZeGBBQnAZl6h
WGREMwNTxLG57gt9i4zaHwG5IZfkUnqQdK0lQd5YWgyUf6u1ZZk9OrVySMPCFfECCn3uTr6xQhsxacObGo
KLcoYrtAopaDAO7D96MyQiARS009wWcmm8xMQbALeIutLOIOfw674Eqf7LZHQOecDowl1KzY1iItcamQLP
usLrGY7ItlfoEfbz8IiFUyvzY98gFzqf6k2qWViarhBdRgFivCMTclIKiXcb9j8J4N7yB8p2CoYr63Kb6o
nsn4H7xWeql36K6c3MrkJCStBs9OU78vHazFJJiHCoupn5LC5fm1UMOs97CQYhfGoOXm7D7ywCHYTgqori
jyTvB03j0qeKASJ3qh9xDeXYrWYYbVeLAspUKZplQK0ijRUkw3Avu7yF9SR3tfbjUXevovQlIbqkVe9ucn
34B5svUnGsYXULzDs4WOw1xyhA9JkyBLkfEvLwlG5meac7kfGyJy4prS7m9fGiWNqfAroxaig6WJojpUCS
Bq6nByD9CbQN6fUQ422zpiE5R5htxKdXTkSrwbAEy2dP3QxiY6SMFh4kefifLp8QPf2rkkSiwB2jXt3Yyi
WJ4Q0IWG2W8aBibf9eFyL8hPmQTjyzG2ZG8uwmNcJfLgVfIcRlsPRDlbTAeOX7ZV1MLI6jiTV8wqgnu2M8
c9T8PnzfumVNFqHMtF1rG0ITWWBHa8hc6J2Fral7QtB5gifcGF4MJ9UUIgiA2ZYzoLIHmQkHnL0eAaIKhf
G5VzffVt4NnGrh0zFsM0UUd8gqfnyqlQ6m5QzucgUpQYho6XAfgyzYUpPnuFfEve66Ii95WW9U8EzBKLMJ
YsPLM0rLaT5EKiTujGLDF1Ja91lrmpF4dP9VIPUutvAJ1ypgMflkST8hZUJzcDoihWXhA5zYJ3oXKOsVeI
yEKxOYLman2dkE1NPo2NJZsHKy8mxWom9Dn1JMdryNFDijU7c9p70sJabIwPpF4C7taKWhPeZa7bOz7mmQ
mI4G0h6KvYpmfsDaf9fYS7Jt32Pq3mtIKl4Rs7WIrJeYLkCK1gxkPb1AIrNBzYXrBhXX6m2jn5lNhktCEd
FLxSxgpArsYdYviv6nFrwVYQr18ndfELlZpryQu3u5zUZYW5J5ozL2PA37ueSGewUTElDFEByjeNylolDX
mrezzyw51U4Fa1JbmiLI2I95uLo1XOVQR4oX4f69uD5cIkfpB0ReKN1zVl4k7x6pYmpCg3xFWfkVtoKqLi
iuMGt4mdN6ubzdnS2qjfAUhYRQVSP7cQaGarBlrAYVteJSxRpKbGgdqyrtsCm5YnAMQz3MJE3DjgUdo47o
kGnYPL3uDAONeH77qa4dyH2rp9zdcYqmzr1ntngsqvmP47zzNkzrmZn5WhgLRFKJ81ekBj5UE8JyASew3a
RSHB8Nv7dKGyrocn5N9XcAG8JxlSuqH7MWcEHimSjieKL72W9ig9ob4UZUuqYcA8bZCGOaOpkk2RZltULm
Y6JEFssvr1pf50klbYpLl9yax2uUxYlENflMhlfh44SRbbGLins9zPBXI1QjEleOMD5UKbCkGcdMZgAyED
mBCn08gWWlUBGq9m7yD6J2lWx0GjhOVESSCMYNdbfV3o3xP29hv6MsIwMbWB5viM5GKGVfFXkWVMPVVFvO
T8wmpxc648IfvZ0Q9J68r4GJNNXu4jyNwpXCupLzxIwaMiNMsJeHcMZ6dP2JoifjXhIiaSyvKkvldu4mus
E3Qo65qBJwE5yiwpb3TQk1zFHbM0CwWE9idicZF9oakazy03QCFnQj6FmbRGaCeF9uopUtjRAHBnUjNywt
q2jvtOLvZNbPzwmeBnw4EFI7tVpdtaK6DOUp7fYbmH4Eej0HlWs6TbGnCNHwDg8Okz67IToC9UgNnNpFmK
QTGGqupJDUzcxeyKuLfjH3z1sj1Gu3epAt3Xvi6RQMif3SKVBy2R0RJGejj14Cf6zCciPI01okm19P5iwa
L8NKU2XBhplcEoyZsojbzTinA1v9OcWROd7s0J0tFEi0PLtTOqxOXffAtJe6FPtRpGtVj2sjJVjPzgBFKy
sINcne5R65KQ7zU3UnFLk0vDLTy7bplfpwUv17CvhuhzNUHigNyiPQNLlwSe809i6PG9ZxlxjWX5FmEFTg
zhCNQfCOwNHA8dU70ov58MAsOMp5drW5XQjhkvg36w0sxmkXXvgJcyN35HujrQiel9lfa0wJtDCWG9lJ6L
FAADW1zKTQLlBZXAZLQaUPr6FA4amB4XR6TEqVKSel1aLPqirWytYHYQbZ1d5VBcLd2anFZvGEj9rmR4Ly
6YTcxkD8NYGXXrc37ZUJTTstpNeCsHVMuS7UX3y13WPMnkWKhnl1MvZSAOnaeaUqCOs3orqZOCIXEvH7E3
GgghXsmqoDCSHZppYw4iew89ZZzjoDtOdDW2YVhBozNR3sSBRS5yEgjCVRiELF8YHDu7tBR4qOfYghzcAy
QGY717HsuCdm2KYOsAj2VuNl6to4DSQQJ3gYCTpPv9uhMpKGiNpJbHp762dGRh0NlicYQajx2pKJMeDm0X
wdtLvEPk3pKB1DYHJFaVNxZpwgUfD7HUlznwyDr58ENr92IiU7FlKM99VI5dzzaJRcDV8ktnOVx72IyPEV
1w6USJf2G9ZKx5DEvt1setTE1StHXEs1pgkD1gz3PYWThSjn4r9j0q6KX5MD60IRcJdUics1XiMHNcwwm8
4QLY4Uw05XBhSjZG6u7dcxBrZeJOlPgZlJrz5aW48nxm2PARaRqZOyGqAEDOLAZXnwzpcw4ptxvUQCWNWh
qIuiRW7mt6Ckje9QPRD5600qMtAoExHEH2hgQ8d2Y3TFQCfXUdeuOXbsHKdLEy19xeXZjbOdVNbzLxd3BH
GL7uLijB6ZPraujyQa6eGwpo5ziy2CUJaNTdc2UEnNERwUEM1XQhZ0MmoJZJpUBIcvm3hgdwQvmHIHRZEZ
9zYj7sBXBzPUduIZQA3eFxzh7WyYAmKiYzPMoyP5V1yxfLLiOX4n0R5tqaEcC6Ggb8atfKxxgul4DEEQya
OgT7pWJ3xKuhc530rgN1Ta9HFM66WDklfZSIRZfFUWu8jcfbZ39aJQ49Q9ip1xo2YkmYUssMEwjZJAq5yL
8n7keEJU9cTVx7zCLaYASXN9QLFX02sfbZ1xCqTtKFaiPH799lc7YDz612DJ5VNZGGSpYYLXnNFXIIeQlq
rul420PBse4UGszAVKeQyTdRL9O6wn4wo9AqhkX4FYGAMwRVJ710iJraWwa1GvzOb4VNkkVHgQHVNywEvh

OUBMhFloEuv5KVqU94Y2dxIuWgdmPj5b8W2QbGQBnhJWy7Yq1fhxDB2BzQPjMJOE3ggpVg9DEOd6QJmoDz
SGUTJXdTCxVFmoPa9MbFyjNj17zz2t4TMVFclSG6JiMauY7aJH6C1If1kW748E8moley1Y0bOgVPRZ1WG4
xAj33VK3DHplKWGUS1sZlz60t5stAv6WgeVjk3coQE1niy3yh7spW9uu5YHr3w6jrDw4rKX5YZxPUKl1M1
GfKSwepnJ0a4AdE8V0BwmjESi9IaJqQ9QVkQ5820CWV42Tct5N7g8z0RGM6Bo3iOjZxtVBn6FzyH8P0X4I
NLnG1KyVInnymUyF9y2OUSKZvPjPyuYVwKcGpmVHexnonkPhxuEb7pIEpSNRcYx0eEDKspRZEzrhwyDdhU
O5AUtIrMHQCvoSVo7lc6ydDs4KvNWRy4GpLbiCmQpgpq5LY4bKhTQXFUYRonm3tKjHLCu1MTEpE6uKyMzV
AeMISkTBQnscGudVzKZ0h3ZyQbb0qonb6LTGoACSkdt24pCFiYRbxwIUrIhUqzhCGOD6VyemLy6pl0yat8
EOQPvgTNmVSdL05dciQi3e3pFcJazcDxgc4xZR5Uw0WR9JeeBdB37j1gO01pSSOPbDGNV1aTIvpXhUvVwV
ffFcD9NZcgRVMQWWhLPD5VLujDEhMdqKuHUabXW0b3pDYOM9jVVarhOosafKgoQo74YSElj8b8LVcGC2X9
yjWJY9IPoyeTMVbcqeEnbGY4iFLiQWvWXbKvS47rUOK6TNdIkdZzl9fqMgjc08pIwW97rkSLCwfDZ6oKXg
bQZEtYHlmRP4dmFmQI9jANrII436xYdCgvm3d5WEnaaDKZsWVLYgLBMXbIevEy0TfVIE8qBzz5zYO36geS
itoG8VsYeOpaHWsAx6C6MCRFST6x7OvFYjbvM4kdWfHcj8zT6FYeKlK8h2qbcm5wDYPTgt0vN0LDBiSW6u
wxXjJ3eW81pSNdxpWGht5BgPufLOS3Cg7PxCSBLZ38t0QdKwAUAUHN5hxdqoP2EfFmxQFOB06SG96Ra8Ya
tletz9viUWtvAEZWrWaukx8veVSrmDObK0df88nRr5bDLsKpwKQ3JJ1l7fy6m0tLupFot0yzEIMfsqR03P
WUj16Y1LZf6LIdSA4GG6zxqkKtwCYvTfK9vMZI2hULQk4pwBTuBLNTCLP2lBbFAy2ONKhC3z6DVQG6YlMz
pzXANpAoCjTu6C3YODrAS8FQEOloJim9x59zr50iD2i83mL425M2eGQJUfVvT9IGKxy5zAwjkovyRZgV56
g99KrtMqTRAxTCLUClHLL2d6p3pxlL7y3GepiM0iJ1jF80DEoMxUtr5EMsSxjdHPgFTFlxy3VYYLzohmHF
RsT6CrB6s3d5kiWp0fvtib7GSP2dpYad3bwoZDz5G2DWktLCcD0HRqtZ09GJVkZEtJDPxMHo6HXHEGsEAK
2GAkle527VZX7wiKF6lQeFcBzoGhGr9mKYu3hN8fScWE2xtbo2vaVMhcam3OR0tDra7vZTSJpbr4uEI0iH
6Hw1IlUKGPF3QEcUc6ApsKHSSeR0thSMFgPxMYUx7cLh6EpSrO3sBGFuTf65eh1j8mRV67eBmCgWsvj2qY
Ahx5IWTm4jWB9HnIkrEQUH91Vs3NQYawyD25UWvKML8MPFN8gkM8ublPhKOdORnZHSlQdYyg7TSX9E9UFF
Qus52oUQEmTwimLPReebxS0wy4iXcZeulN0b467m4c9lS1baHKoOQ6LK8nIiGC2sDEGJFl2w8tX6yQvuG6
D5yN3Dm6gu2dsfy7gNzmKN1dLEfQlTHfUxIpidKuQBvT5mRoVAFRlmTtoThwyW3CnmlGhGhi0bHzs0vgDI
h1FkMOFZVR438KpwpA4iOOuaz3LMDNoIXhyiZb86pye45LXhSOVKlZkPE5rZcPGmM3MykcA3XzbBtuQt27
3pozwAoZwq8F7KbEBZIxCWRlEUui6ahKkjo3ZpI0OcN4Sv5Sratn7NoEYkSfXuOG6ThzczXHH5GRIfWdm6
4Bpa0VrlNxYFVzB3uegiF5wQj9mBXjdmEvWZSXIzGjEJ79ouShJLqCarsy99qaLcfxKqbBqE3VnDoKP3EM
0qkF3mMM9rwR3rAbn6lrW4SamwRRlo49UMv5DrhpfRWdVvHUSHNaPwny3xFyEe2JmEwh833pYNxI46dWkA
uzo0J4APEJ1Wgwsuzdv7epxxiZ55Cj188xHpqbOuc6hwH9posu1nnMA48tmQtAlUc0cv43a2IuIhJYMH06
BfDGCKF0NSVQOQu6he8wEpDTAKCbCXY5OE8MI3EM69Oj2ht8GjRrGfBjGGSgp3p4uDeqzfRphUtlb9ybg6
mj1qKhKuLPpYPqdCK5CjePyLqTSyBc57W34DyuAFjB4j7CUpjcasXr9i06L2ctNiruC1EKrUHPSXfVrFRF
tGW8tYXWlUg95WFmYPWbxt94xFOtnQgM8RZmAsL9CcK7SIUiKA8A5awdCaIL6LWaU3zIFvFgPffspWPUAG
oYXlW6Pb2yHZwN4ccj72ibRxjqFvjk9BhP5N9R3GpN4aZlx9zU5nVU0380XoElt83pGVsOx7q4Nc2PPVhC
xqdxsuWmfvNAJGTnd4jgXpzSx3WbdWfyHObcQDAZ4SZqXif2M7qVYPh4DEyvqY3s55d1SoL80lqHbdF1hh
42M868sJi14OJn8KnjNQME31gJITqCynjl2epvW5hiUQQGuPLjMTqOpjJSfVghNfqtlfzwQV7dBhzDS1Mn
kAKa6fxZYCSU4vNUSQ7lvwyVjpVPHZSFnujl6GWbWqzMvSthD7kNqWbjMMQoVbYo36WoSyK2VaXyX6xMQU
BlsTq4H0WT4hmUoEYBlaawevjHDjjU6VgyUgHiCK6BBWJBl84C36hWmMa2xgXFkiAVreH45TCXUBsPu3GY
GNoWnkR0xrYNaAoSZZEAp5VlgaqpPe3uRr5NrIDgOrTw5Z3m5oehLWcxQXVSqnVax2zXwfOeb4ghDevfGj
fXM0kPUyRZZbzF7DGOW26Q3iEfC0fyqcqNyMoDeO5eSjfoUa8XNrzb9x5VYpfGO2Cnw5J7nybtQ7IJblZu
83nc5frZFYfiqIE6alOXl7lJVu4IhA1HKG6L8jYp2y7FrJnD7JacaiuclTxGYxEg7cjiJ1wN2qT0enTWwY
1XJpZ0tuclo9svKkJXMKdwtAzOhTV6JYgQl5BJMgXOEueehlQRuRpCGfWD9OarxQNiDFD5BrhJ4RoP4RfB
FBAcQ09QAe6pOISQZwTi14Y5YOUgwxw89ahQmas859x9KE4WIXW53I1B4dgruyO5TMxUEXvTushu9mkJum
Ticx4K7ADvfQdjy8nqXZYjPFqs9pT8T0UlehttBF1wUHVJghveWvPoP3BZVAWFIEfAYE58VQLyEB4Odygt
jT9u9wBCuBYd2Tm7OF4G86ITTKczx5mL0VcRxrtRkLAYywwTUqAge3nDIkIEzgAbykWBLML7ueVMkFA0QC
fSn8njY3xSkbKoYrYAJ3w77WsUXDySWZvTRWB2Em621XCkCtf8dJKe9iS5rQmTqSDV20nY74tC0GxMkAWK
SccxTInZxF8XYGA563KQ17PISH5ku5DJ3feKo1tFCaCXTT7buZW23UBmDyxXKJ3EJRVsrNyym7JtVVUzC5
lWGLKf1ph1AgXMYBwnonw93yWGrWrxQCymGTDfbBx76vYGFVhnb4odGtQZUbj6MAPLTS7W9uqVPrwTrPf8
ZHSsew1HbNMKyQT9b4APbTaO4IhuQrnE6IW7C2xkmOfwjyVAZqP0s1GKkCDfVK6DuFYuUA2AoO26DQDVJ5
B0w56f9bCK8r3GC2ew2RqZto1F2NcnLK7BqAogqVotqTgMiBC3LUP3jJa7uEuZikdr9JtDiiYn207cVIi8
4mWbb1xtrrXo3v1lLAPtWsvgc7wWX6SixJi0GRUZQ6IpI90REnddJ0vcn12PrEukqlSU8JBQiYEuY78yox
3QWqUWE4DePpKFXyp3tBWm4DCzGZrzGMO27rm2FvcSXNCload3VQPtGgxXipSNhGYFY9xKM4DzhRikmdUX
H7JffEKuYFoFAP6gFo7PgVantjN0YoVgJuRBIHJd0QY5SDIzmHw6hMABnjzYVv89FcxHumO2sSTIxSzvS8
9cbgJODS4GbPvMEFWYwtSkt9pVAvaCYPAYY7Xt5fXEysbepEkLuhI9UfvlxGRnFcJzDLNYGxaXml5k26kr
wVvRBiVtVUDIm0DkXk6yUtefEbOZlcMtp9PDXahA4Fu7fsbAikxZ0XcZVj5BCbdbypGOQtQ7ZAyvH1aEWN
T7jMKvlwgOrLv9lrxipezZNmjS1MAI6u8v8HKUGuvpwv0PEzK15Mlj5BIALm26C1TYEhTt1En5PRjTpLBP
cUoF3fXH7cOJnoWXw1dKmAMoNYsR7DKAXbevk6RmAwKnpJfmZDR0IiQRxIza16Tff2zQGCFADz5FYZDfsQ
kCJrzDDIwSFT6XqCt7D0MbfbIDdYZZlmj86BoLv1IrzZDCA5rZfDwaOhovJT7ZU2iul7VqYPXrPkREvJ1w

1bkXWllZbWdZCBa0pdqOnK61OwPlJNLyaICj0aenp1ZLjIptrO3OrBXHnigGMwwLKwgVwtSVcHUIP2Tnfn
Fg5790m97LSDUHA5dqgt8HEIIgwwK7lgIP4lR7pxGeYdA5mImZplKBIzU2qFUkGXjICKYqCGpCgib0JwXo
ZD5jf3cOjsEarlG4LULVpkXR0wqoVXteXCy9y1fEzlnzbYMlBQw7mra2MngnTZlUeWQTWk6Ws7RCnYv5Bd
x9cWo7U5649PAnPz09BzrtTUbr2ft4JlccvNZRvzJosGqkF0o5ljrKxxMsp7Ac24RXzBuzpuDgW5uM6yCS
rsGyFN0OCPgQsau5dxcTCLbUs5apyjOU6Bzp0MVB3OxYMpNmg2FsbPnCM70Y2RwlbcUJBHHXzWp7tAlORF
OuqWyJ1MrkH8R3kgniw4yGJTyKlv1Rfe9NKBulfmHI71VDGGcBaLVuoqfChx0pN2Q3iIek72aZV8nPvJKW
bhb1XjxrSdfwGw88HPfoOHCmSBHQvO3UpKBQirKJA7CPdmGVDZESkAUuIVwsoKYpc2aXFXwPwBPWKeengh
8PEr6FhlMqQmGL7HnJWJkA6mc55ZncooFV1BMKH6O9XQzOFgSTQs47KO0z7BjStnfeUdK0z4Ss4xQi0Qi8
tW7adnoFnY6U1fj6rNTZAU9nkQOkhQyr1ba9V0JEUQLvKhjtO9TsAuuGKL21pLHiBlLcdzpAzAjAcrJfr9
uIPhRnyRACfZxCtBAUt2pkF9euZxxU3YJczYkJSHawsZ2kk4PFS3S3HUjnMaPPjPmMOBuC8feCJPputz3L
GjumwQFHKbpyXTpf6hiAhC9dFwTSno1jEkcG17VjL5Bc1uvefdJuwemV6vm9EFmRrJqiHMvaetTORiL9BZ
NPCOXKqIVvsHzxLtEnYGuRDPbIvUjh3i7PxsedIGPp9BRE8yFzraHuwYI4Gqk7pl5bcPxGd3O6uZiyBgZj
RRCT1RN8TTTkgRlu0K5sD2WZ154OZffLqDw2I7hTEBsZ1z7Ul8aF8lwE1bDhWBtgU7f9PqxSEZoyELcJQ4
OO48V3Qa3ZNbsWZ9Rr6Phr4abpPnRsHvj93uoAdJVi4gUfVmfgOWMBtljrbPgE8peKoZdX6orZtWK1juhf
HShDFlkToRtHYwJ4nQfeUEoe0ArYY3NY8uqFtMtn0L9OfqnhSazWjbGFdL0wCjx9dMLbAFhw9vNUv87MEg
sBKKC08npa85TmiTNMXJU5tSrkzRZq4iCt1PsGZra5JwEwfUGUlSvM09CFMAdWOG46lc0B8BnF4oLA8iYo
cbBevhaNQiSW8L01l8LYjcYtHUHwhVKmqmMcnLrrhof82xkKPsCtGOIM4H78DJqh2pA47sQIkvXwTBITtW
ALLLAIbpeHc5GbczOcb32KgRkuFPVFwHbvXS2vAkv1DZNMLcgRiCH9W56dauZags2DBwizC32q9xHUM6mD
8gjZmcbVVzRjMhqJBDueTxlgpM5Yjh6G4d9OFhrpn6WBp1PMjZoUmONgAaVkGdi4XKJiSBl3Bul9dp2b4w
HKfcGYdngtw6nf6bLn7FEDfs5OD2tkKQtp38tKybGRtUBg6AU8NM0SGRLfQikjYV2X5v3ybyaiyjQLRhKF
jmB0wKnV7oMUSmvSvnIwrzqxrNSB8NrII934UH20APfnC4rxA7B5wtDNGxr6jPLJrvuhrp55yIkLB04JbG
ZEKlMN4AUxmRZnqKaOVQgxIVPMhz8D3iwQk93gDapoSXmxyPfvoQxpaSL9XoBdEf1dZpMjJxsWfWEHSBq0
fvZmzRyDlRKiEr9BcUdrDHXgDVmH4vV0f3wEzKa2qktVeBrIE88FRiipg2QuxhtZQfpb93kGKaiocYLovu
fHlZ6aXo37aHj3qPiICuKQroDCrGrvVD3wRuXRuFVKw48zrX4IciDUT0qik1jiwlOKkn2Mn1nMvRjMhtd3
0t4h2xxe3yZjDNgbAIDJMTxld2XVx9P8N4Oejb27YVWabUHk9SgKS5lGiP7cgzsJz6MxnilXXa5B6zbUua
GWRCcisNhv2OvniwF4G6PzDC6miSteyjt1VdRnsv9u4TM5yP0rlpmbAiJJQxMCFc2iAAcIsqKQXnF9ZOY2
urAR73BqenkKugurbomvZ1wbqXAP6TwI2tv2kIjam0ZO1pTiPeDfuQqYZTqvomhjJ60wCmqrzhriTnKZkx
jPWZQ4YJwljsNhJeZjJ3zs3g34ifUdVHfQN86uQel44tznsdCKORAWdI7gfGpR6ftxLyfFIby51ptwCRgy
mhy4yLLM3fsdGBR0YRk6WmoIXO2n8AdhPYjilwjMc7OlVwFCmvhctXQrn0O1t9peYiKb9Hsm8Yq6HlfaUN
nen9T6RnSaYtPeimTJJeE57Jyi43XHoTLHVxWLAmInQP1gObr3fIEVsCsZntgIIuHS8H9hoe2oMowt5uZ2
1ly25AR5ycY57PaBiodA69sCAgNshM5lN4HyFH2j3mL8PRCkTDVYsLmR3LEaAxm39qqQXxic2ZBW8YYrmc
pw7tIjAhxa8SfEfv0NlA4uLbtBdPg3YGYoG1DnmgfDtyKWGg4CUJIH3IbU6lDQN4gVilmEqFdJTBqw1D2x
6eqWENtB04w8xADozBFSrD6TPzx84gci9PhyoCDkorxZhu7jAH0uyEbZFW5KIGsHGGw7dK67A8VIAznZ7Z
q6V6ArGu42ydj53ytQcfhGVkO5bycs64wuWdI5CvJ3b8Ak5qLinWtl7f1xAo00PWmOZ5o7D7PfP7jssBOt
zQQp1go8BqOrjXaa2ObwZtPdDCcoaBh9mJ4UbjzXRNyWRC7x3AHQZnbocXy4U71fjcqZ8kX8AOSRbPL5ov
vExPFxUj6zBMqHxhVNhsMFGdSSo69cKY2BVa1cLhaIcaoRzG6d0acAeY4R52lreHUQr3T9GP1TUG5PEaQf
oigp0KYhlcj9Z4BDz404BuX9vmx8S5EVlmJ7tl7YotfPfiG611BMZvC0s9CGIvBrMbzNLlZ55gnlSmjy8l
sYwg7cRQkjIJwhcTThdtfikuuLVXgtAdalerYCkuWdpIjXw3PwWyBjPryOqVOHLBSeIZFABuBak0JDAP0W
nTlv4Ll3lxwJBEYDM6eFeHRTxO7bpVyVbvcTFBWKSYmc8gzCqMpbmQ4b8tQsfi4Qk1eR3YrQ2obQVQx2l8
HXO3hfHctR8LZoUT6Wq9mQ3L5W4IvhE8p9GQJRlUaAedlz7sR52o3CuPSbPfJq6an4UEJEY8gzt1acyVB4
QPaOnY297dCcsTfyz5ndg25xGprgqnuJTMXEfchLMXFkKaXM64iQgQiCKV7QqZmJa4piu8yC5KK4zkz5mn
5tQ2JriIqbfUwS7HqeJhmxn3nd50TH7dj26AlRjZFuOcztrnTAjGrkOf73JYSo98z1MSObtTblBD1FO4F7
A6ob4Gc34Ef4Pj1WowIf3E63BHaOjeVoiQlPSabGJr6nhkzi4EFdsAGT4mygMwqfGKHFJCAZPgQtNAq6x4
EKpGWnzgBOiWBUYsWthF61Uf85i6Nf0rMYxHI0HxBWxi3bvBb9ECQX12W4mpxtvOaecObiXpUwTjGI0Q6R
0eq3HXagfe0sO8MsrW1s36Hf8DjHzTXrDS4qQ4lqi90cMqniXuH5qqyiRoN1Pyu8CHemHxFTP5du7rnuMe
P5SxtcawvTEp8fHnqBRnu0lwdAAFOOyjgZBTAKpwkrcpznHvzzZekLVvrjd53CZ17vwChuZ7ekUQwA3tnQ
xNAqThHOP1c67huHyqpiNU9JSIPVDBVaweJ2BzSDNrQGJ0UqFbqWb8m1gJ9GIUWWRHTIfIeDz8lbjkdUQE
hZX6hGIOaW4mdupGQTuXAy50GGaxOtwmW6iMUtwuIg6gq2EQu1riLcrazmoV8efzsUIt9s36URYremcvsv
MPB5553Gf3lgaGdkFSmKZ9uDj494w8iANZVtySptvsTAyCjH8t9ZTaUYhfQ2JqD84gPFM1ZeQPhZxcmxjA
b7iAPJOtexoREwESjWQjndWSbSJJNLr9jH4WqMHojmrFY476jTg5WvgQYkjGcizgelZ7NN1EyzWXmMugMM
AOu1vMV8h1Xx77p7YnTZKp0x6Zh6e5zAV3A5nHOCXUNoTbQipqJOJfAKHH19LvHfztCPvNJj0dUgjee8Pb
EGhbuyy1MeLFIlTHCR9263G1Kwq9nbWIBGvcnncHICKuEkawuI4Y51S6ojQRrMdOYCRxkJT3bBneG3VwLe
omFq94okmUMbPCdwHTtqcfeQGnq16kwGvL1UwAYJonglRgZoTXdmvMuQI9fwgHE4iwmYN1RynR54zNENau
IIBJ3bn3ualyNiWQjndn7v5mHoIsb5RmNkHbEpM0XnlOIHxfMW88WtDRtLc19gloF2FQLdHbmePBylUFKo
RxWRPbiipmxYE9GgbP1nxFG75vWDabHdvTPJJBDmVlZ4Lbl4n6d84BeWrIv6yOx5dqTnJzDzkmJVl5eNlS
Pr4ztMVv6QranvxsJ4x8d8ZW5rIXDlTzNJora1qZ5R4eYPvZbfYVY1iQnWXE2Q3HEgARKVZcQSE6krKRzs

```
fIhm0XaoKrmqpOuYfrKXlrm1XHmKIUEMH4svdDKgRbEPrMempbMZT1tc6ezUsbaxv214yHH72X3QOctCVl
0QwWmvgMeXgIcxCkhDMZ8kAoxXwZybT5YjiSns8ywNlmkjbLd2FzLrMUUWt0dWYW22dw8bOVnjElV110LY
swGxXc2bU9Q37mLWcjeTRS6dWKAvYeh1tVnDt1ZAfK8B55FcyEASUsLpikD2y00o6O4fXyVyPXovFYrAZf
q6Uu772YfAqHeBhGBoNEdZCOEXt04YoVTJwysNHBgHz1RdegWKFuEIpqmwL5TNni3RDz39wm9NzhXRXUjW
clSvGWvNhAbLzPSpLEYKFJvZlTcpmPYYbIq1U4xtqrb9xLpDy0DSRiPFKjOymqnkFr1aLIDGjicEyq8n90
6aDsqiaOtMuNOrTRWPaLuK2b5FklbGHbS5zRK757rentSeCSJzJNyo5jeWvgMWq8SXZPfPqn15Usfd1HaS
QozQ5uYoaK2NPNnFGwEWAZA7yLILXyYw9SlXqlHP8xHMBBbjAbKTS5UfFknxnk4UfuMJ7rh17oMFmgEHKP
OBJhCQsOk1WmJbHknO68cNUhXbuZysUpBpPzMqQDQ2dDfY7m9YSKw2G69nrbLkr9TI5sAP3MAxN942U2z9
2KB1glyL29069IyhEMzpBlpBmWoML6gSrIJnUUOBTYMa8boLkyjCYBFagr453ykVcTntXMEVdCZv2hmfEV
WIkSz7gaSQ6Gu1VXNKWfYf0pfwMlx1qFG8zB0PFtoL2QD8Vdz2FtoivZIXX9H9SMA2gLV6mu14uozn7hRS
AhVgCm0TEOyEwg8RvX33mRkXEGA9NaCnb1gkBf5v9qw8z3A88iytZrWJ0yYcfFusqHe5Axm457pb0QH4JU
HkQ4TWoCBf1MSNH0zDvTlwWRZtvKL9yQfNqwb2E3KoMmpn6gJmh5qm6RqR5cl9XvLSRZoVAva8ViTZsCaj
l6ItqenWK77OG38HWDKDUGAu8y31rdDSQcXWaS4fjMFNAIeWQRVXfRkG1aHxeWh47dxjLmWQyvjFDXyBlV
VEpCptzaaBdt2zGi08CTc231cIpXRwrpPlQ0k5fwaOl0Jcz8HK0tzX2Eemt9TNAvLScz45uoRSj4q2AI0N
PN7er7Sz4900q4swivPB72tDGfgzBvjD5H4eyTkk5ttGHeBRqYFjda3xJxxVpnlMzUCeohgZSWTMOSD1vO
cjoQvdSTqX9S83z9klUes6DAKlmus8aUGsyMDVj98eNW4SFDhDh4cIG4XO3X8mhArOoRfOQ6tikmb2Qpi5
FDNSZRKXQk0qzvPcsM3SSfSQQEqBkeTf71rXKZfPXhsPkFzvCSDl6TVebuGjiuouNOkxJ6rWyNZryUkQMs
Kah2fb0j5UlCxlE1BzfUwxlFHNV480LQeHXp1epV8tqihVwlUJrIldkv5fFqJwzA2xie9W4o0ZJZS5RKm8
V9PaQp5J3GH5QjkPY8mq41mmExR3dl6dbNV7KymvSGqx85LO6E61lDth6yakIJKg8BSypq5tCwSQwUmRvV
HxpMnnXqFDkGJU3RMLM2XnF9ry1QKPPzf4D1Rvn7ZHtDq46jG9xa81eKgTdaEsoQzc8rYh6IFutAhMq3SP
MSqQpjHYjbWjLhtJM0s4iFPxNsgJFvEPhShaeI9unSmhacx4bEGtJdGag0VV4He6z64A90dEZ4hluqy0Ix
v01pK5vTtm30CDUBHk4hzUfnNGO2tuCz2JiDBT82hgHjv6EMW6td3qBSijZ3EMikpd0Ldow6cEojd3Vuah
5sFWuwP7phjEKqOcCefjfcRuaxpKzzDNHHiNpzHuWMtOyzOjLokzgdl0b2a3aFmmOc0rncCgV0aydOX0Se
e8mU6Cw2wroalfgWwE8Ee8iuSEysd3NZAbvGj15vFd876pB9dNWH0YWgcbUDph5Zv8WpW7VlxZRsrskwoF
INZlmAyzWaB3yUxYTi5rPSg8kR9gszqZjIVVL0T46rMeEQ97p2p1njxyrDiFLV5Vu32mQrorvHza5SAvLT
bfZSTEJ3BugELukPJZa4E0VBoyhaBk3qmElydjILLV13ugCZiIFjzmtDLupCqEfGLvkWXVnMcrXYeH4Imv
KWh7YwrsLUVC3n9OrjKNUIEutnXuKsOhv9VRMu7IjGtxLm1OErYVmtF4TrRzJ4brY9FrscbluGnJhhmbzC
X2jw3ipxdXbyXJCqec39Y1jD2xLy7yhERe2o1Y9oDyJ918BPw7yNQZlQTB2OVyb7PsMxlwL7YXLLI7a5mo
xYdKn4ERfSU5rcceFE2KSVBOlY98Kg05MNPEz1Plj42CVBjc6lyeuE414vZL4dMutUKMQEMzJ0mpnXVf9h
LFYVHhQTJoHqZ6zcdjgjfWRWyVhzLQnqoXoMDp7YC3fIYIvnNGTK1RdBlJ5BWYBqh4BAvaXJnt9MkQ4ETu
F6xhmUGxdV3y295calx1ZKUys5L9ZncSCRR5bsAMQWIwtO9ixwAzAEuaFYCUrXMOcffFLv48hRY3rQNIYR
k0mJfyru7GcQUzDY42ocdPGkD2iqB1uzeqIMwW3x9USo5IB9uNcNAiz6w9pHfCreIQJF6L4wIUqYMCIuaM
ZCOxp6MUppgUEe4HQHAkmxpXIMXB6KbvzvaDPbPYbXeRQVywuWwmBC0YawA5qA7KOUviv7zCVTn4sGUgzx
kNMVkhjHm1cQXFrli1OzgYQ6MHLE72KC12MEqWjwaMDvBAiAwKlBTntgznqgcRwCFZ27rWUTFUGT3RyQns
Od8eZH17or9rbLZsbV7Znm6UgtiZIFfAOTJngVDs3TyCvg00fKM0n4wDglPHCYfjIjcEVsQvOyvV1fzp1o
ZehHOs4ENqYFNycvGBkLCqoyClBsLuwtv9DL7d9th0kSSyNBJAhheu8c5BtCt0pLre3GTjRzUO3DoSSz7V
F9sQ6OLEGEfKrKkyexTm16fXqdGPqSdXEyzQvMnLOujkp2zppoud11ds5j3QoPdIh2BZ5wf8ugDTQeRtW5
lSDGF36Wf6H4FWdO9JvANXry0fwszwXDJW9fBn2uImXjfJaPTkCSB9fxFZWecaTkyPQg7NJq05TqGsK5ff
szEDv8b8PhhvQtMrdSLKhQsjsdgtsDDOgVOnKmbkCgMrYIbABDwOPoTRIm5JWRCNiBUA0W5WXrooHag4xD
gbf84f1bu4cdxGLlwLbaA2tFwHyBtScBcHdy3X0yLFe9stabEMxGZVikU7w125zc9hwQqyT68uvMFZMQmq
H4TgkNtgcjqoFVbNFHepRDlOdb5aCnR716KAJ3fAh85UJObJd7YI8RuhnEFz6Iq6i7UUWC1gk38HXVQ7gj
rIDgRChHh8zyWN2wgllUD0bqGVYTWHvYXVrZ30RfLhtMYRx9AGBnFMHNSGDeKdNwzv1HDqRDsfZMIifju7
31m8RBn272dYzsC0Sdb5cGnIlHo5k03AI6U4YP2jGut40Xdu1toMHoYS2JzpWzOrTW0AgpobDjr4RxYrPF
lgqkqR9agjxX5NqPhp42NrAPn'
```

In [ ]:
```python
compressed_string = zlib.compress(random_string.encode())
size = len(compressed_string)
```

In [ ]:
```python
print("Original length:", len(random_string))
print("Compressed length:", len(compressed_string))
print("Compression ratio:",  len(random_string)/len(compressed_string))
```

```
Original length: 100000
Compressed length: 75202
Compression ratio: 1.329751868301375
```

(b) What is the expected compression ratio in (a)? Explain why?

The compression ratio achieved by lossless compression algorithms like zlib depends on the redundancy and patterns present in the data. The more redundancy and patterns, the higher the compression ratio. The expected compression ratio should be 1:1, as the string is random and has no redundancy or patterns. However, even though we are generating a random string, there might still be some sequences or patterns that could be compressed. For instance, if the random string contains repeating substrings, the compression algorithm might be able to exploit this redundancy and achieve a compression ratio greater than 1:1.